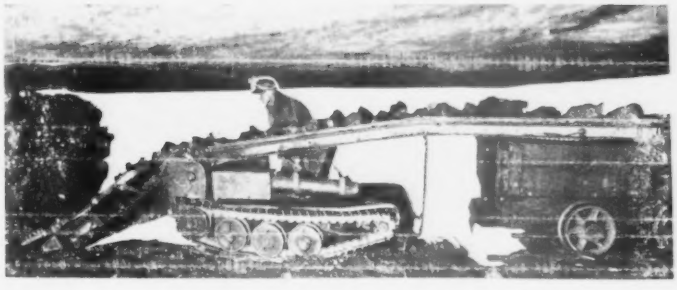
# The MINING CONGRESS JOURNAL

Volume 9 DECEMBER, 1923 Number 12

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JOHN W. SHEERES

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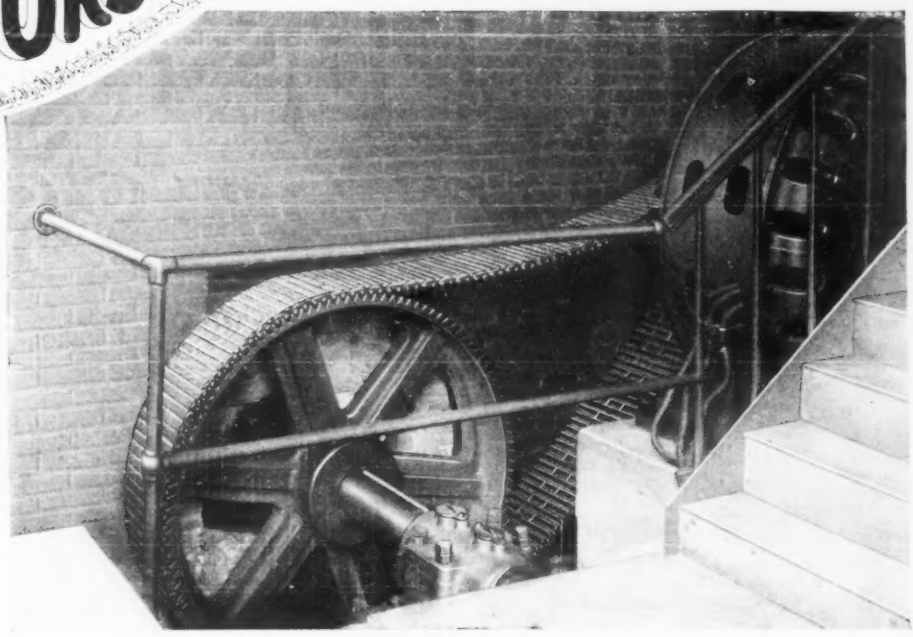

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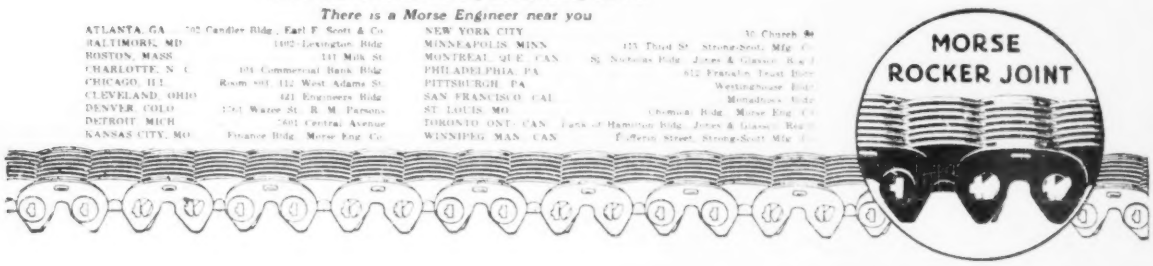


2066-30

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**Published Every Month by the American Mining Congress, Washington, D. C.**

JAMES F. CALLBREATH
*Editor-in-Chief*

E. R. COOMBES
*Managing Editor*

MCKINLEY W. KRIEGH
*Assistant Editor*

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Entered as Second Class Mail Matter January 30, 1915, at the Post Office at Washington, D. C.

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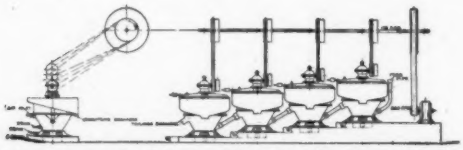
An improved cell combining the advantages of both pneumatic and mechanical agitation designed to insure perfect circulation of the pulp at all times.



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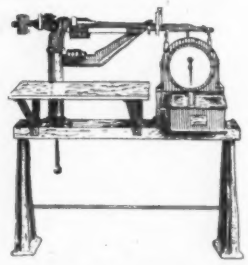

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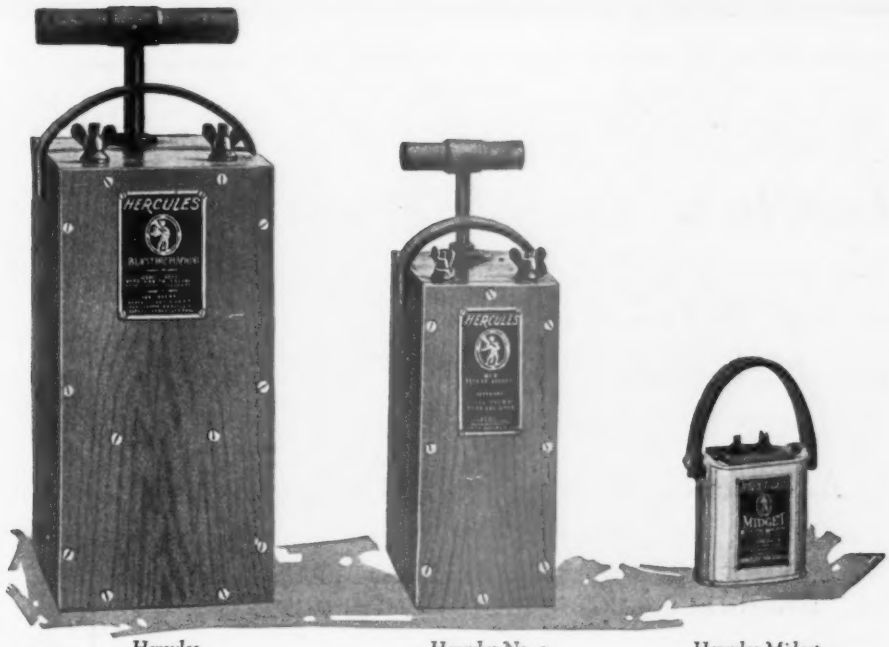


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*One-to-fifty-cap capacity*

Hercules No. 2
*One-to-ten-cap capacity*

Hercules Midget
*One-to-five-cap capacity*

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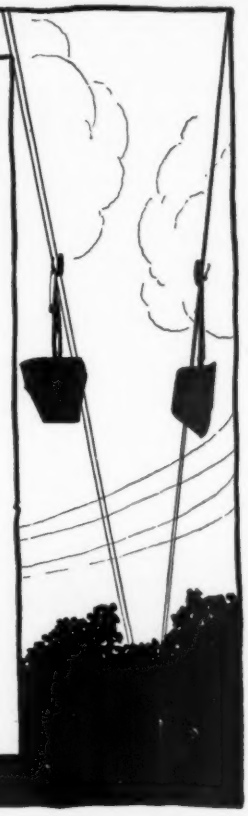

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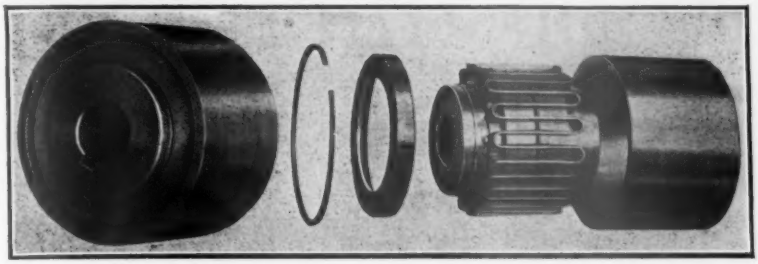

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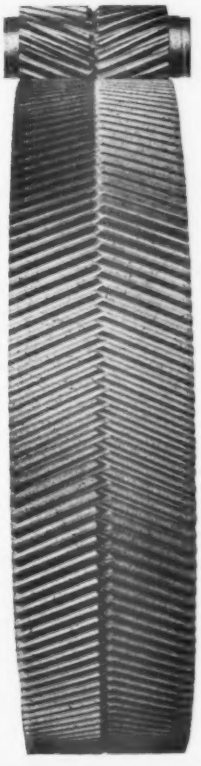

# Falk Herringbone Gears

We manufacture a complete interchangeable system of herringbone gears, with teeth generated on special machines. The Falk System of staggered teeth, besides giving the maximum contact surface for a given width of face, is invaluable in securing unbroken continuity of engagement and in equalizing wear.

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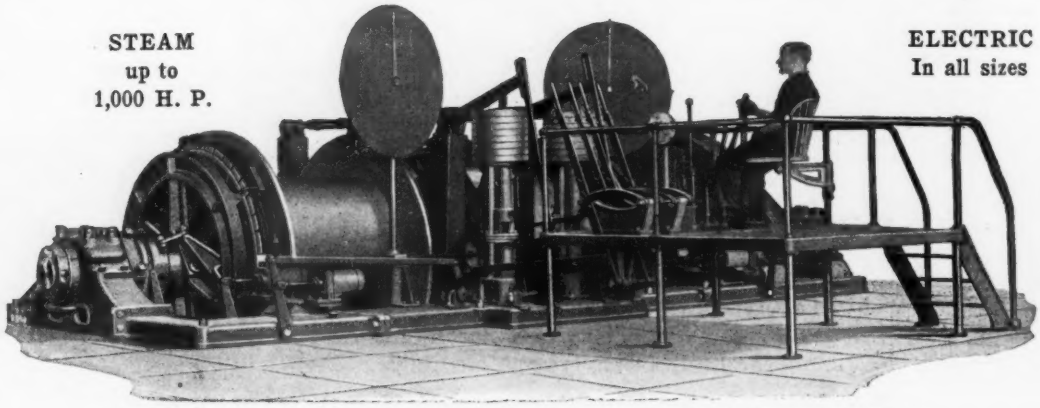

Double Band Friction Drum Haulage Hoist. Maximum duty on one drum 23,000 lbs. at 1350 f. p. m.

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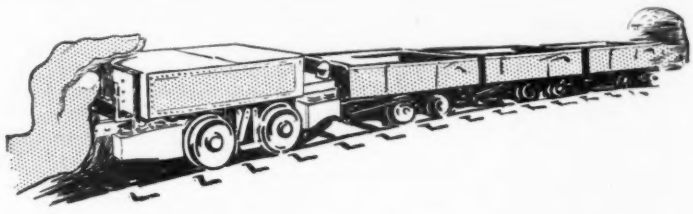
# Arrested Production!



How many times has the failure of worn-out equipment arrested production for *you?*

These expensive interruptions can be eliminated. Just replace worn or defective elements with dependable Hockensmith repair parts.

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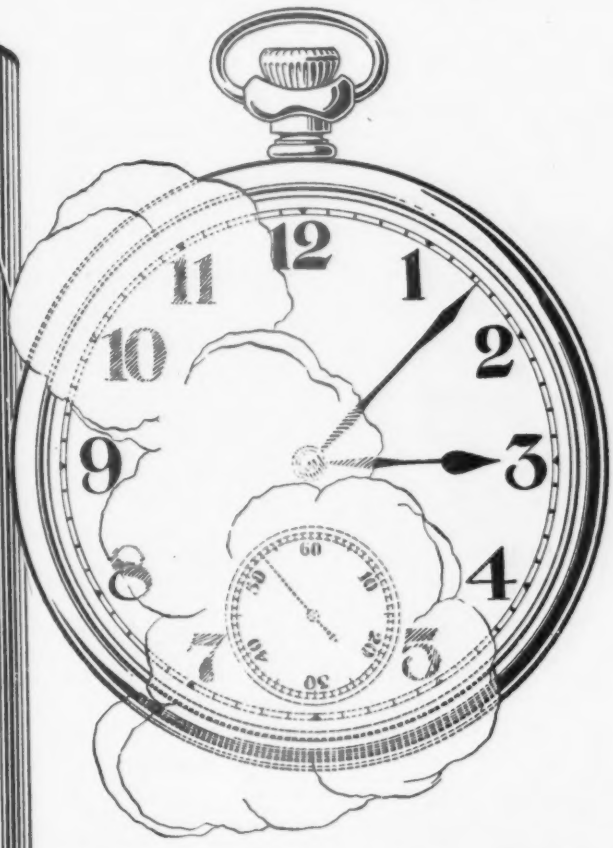


# How Many Hours Lost Because of Fumes?

FIGURE the amount of time lost between the firing of one shot and resumption of work at the heading. Multiply this by the number of shots per day—and that by your hourly loading rate.

Rather a staggering total, isn't it?

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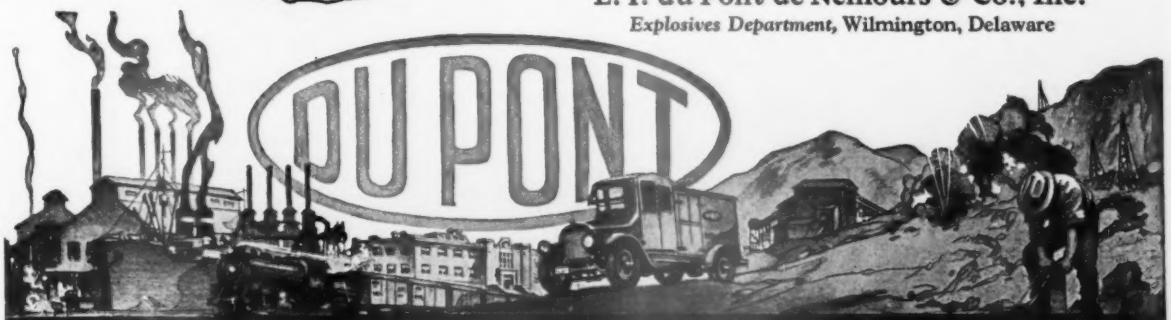


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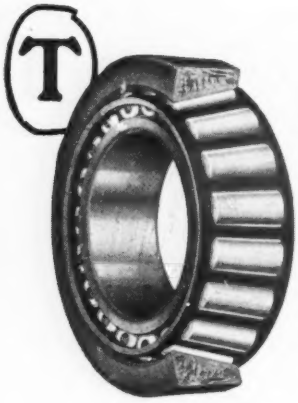
## *Tapered*
## ROLLER BEARINGS



## High Efficiency Due to Timkens

The fact that their Timken-equipped paper machine reduction gear units on actual tests have established an "over-all efficiency" when starting from rest of 96¾% to 97½% and when running at full load, between 98% and 99%, is admitted by Westinghouse engineers to be partially due to the use of Timken Tapered Roller Bearings.

In explaining their selection of Timken Bearings for use in these units, an engineer of the Westinghouse Company says:

"These bearings have no higher friction co-efficient at low speed or at starting than at normal speeds. Hence, the motor suffers no extra torque from gear bearings at the moment of starting, which would be the case if the gears ran on sleeve bearings.

"As used by us, the bearings have a large excess capacity. They are especially suited for helical gears, as they have a very high thrust capacity. By their use, all special thrust bearings are eliminated."

These Timken Bearings are installed in the reduction gear sets made for Westinghouse by the R. D. Nutall Co.

**The Timken Roller Bearing Co**
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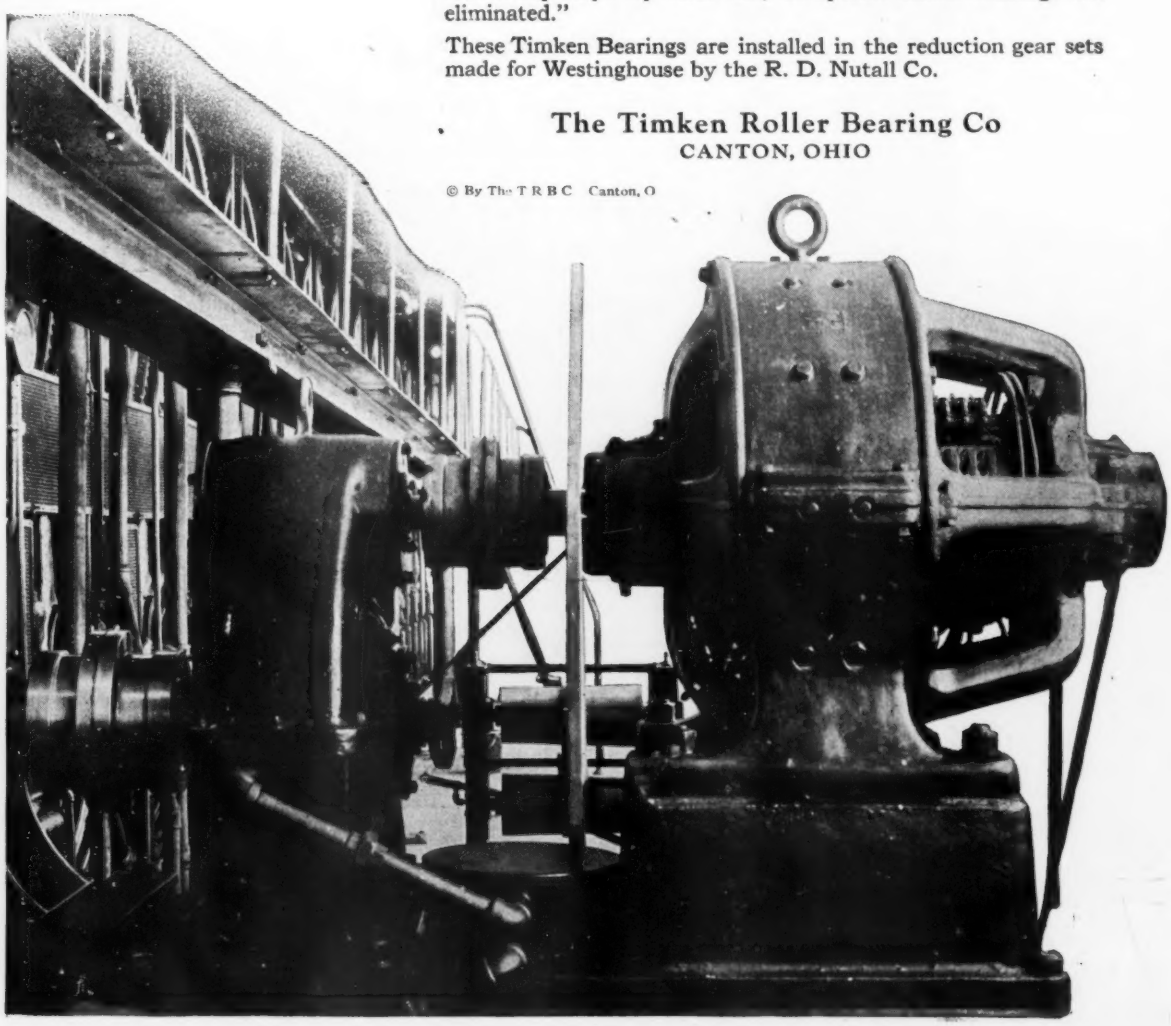

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# MINING CONGRESS JOURNAL

PUBLISHED EACH MONTH BY THE AMERICAN MINING CONGRESS, MUNSEY BLDG., WASHINGTON, D. C.
Subscription Rate, per Year, $3.00 Single Copies, $0.30

VOLUME 9 DECEMBER, 1923 NUMBER 12

## *The Railroad Rate Controversy*

THE American Mining Congress has raised the question as to whether or not it is the intention of the Interstate Commerce Commission to require the railroads to absorb or neutralize the economic difficulties of the agricultural industry. This is something that the Commission heretofore has refused to do for any industry. The American Mining Congress contends that if it is now the intention of the Commission to abandon its position in this regard, there should be no discrimination as between industries of the same general class—in this case, the basic industries, since the hardships and losses caused by adverse market conditions have been suffered by all. Therefore, if transportation agencies can stand any reductions of their rates, all basic industries should share in the relief thus made possible.

"Cost of service" and "what the traffic will bear" have been termed fundamental principles in rate making. Ordinarily, "cost of service" fixes the minimum rate and "what the traffic will bear" fixes the maximum rate. There is a third principle, however, that is more fundamental than either of these, and this principle is ***what a traffic-producing industry will bear.*** That is the basis for the contention of the American Mining Congress that rates on raw or basic materials, as the beginnings of all traffic, should be fixed at a level which will permit the utmost development, volume of movement, and utilization of the raw products of the basic industries, irrespective of cost of service or other factors involved in a determination of reasonableness of rates.

Using the metal-mining industry as an example, it was pointed out by J. F. Callbreath, in his petition to the Commission on behalf of the American Mining Congress, that basic metals in fabricated, refined or finished form frequently are transported at higher rates several times over before reaching the ultimate consumer. The railroads therefore can well afford to transport raw metals on a "cost of service" or even lower basis in order to induce and stimulate production and first shipment of the raw metals if thereby their revenues may be enhanced by a greater movement of refined products at rates higher than "cost of service" or on the basis of "what the traffic will bear" so that aggregate earnings from all shipments shall yield a fair profit.

The effect of basing rates applicable to raw mine products on the principle of "what a traffic-producing industry will bear," would be to stimulate production in many mining districts that are idle, and to increase by many times the tonnage of ore-bearing rock of commercial value. Large portions of the mineral-bearing areas of the country now are unworkable. In Arizona alone there is estimated to be one and one-half billion dollars in copper ore that is within fifty cents to one dollar a ton of being a possible asset. If rates could be established on the basis of the principle of "what a traffic-producing industry will bear," vast quantities of this worthless rock would be utilized and would become a source of future revenue to the carriers.

Rates that will serve to prolong the life of a basic industry, make possible the utilization of the greatest volume of its raw materials, enable its units to operate, furnish employment, purchase supplies, and thereby provide both inbound and outbound traffic for the railroads serving them, are essential to the prosperity of the railroads and the welfare of the nation. The American Mining Congress is striving to introduce a principle of rate-making that will accomplish these results.

### *NO CAUSE FOR SURPRISE*

THE mining industry has no great cause for surprise in the announcement of Mr. Elisha Lee, of the Pennsylvania Railroad System, that that railroad has found "employes' representation" a solution of the problem of bringing together in closer harmony the man who employs and the man employed.

As a matter of fact, the mining industry was among the first to advocate and adopt such a plan. At one period in the history of the mining industry, the Colorado mine war was a blot upon the nation. From a scene of horror and disgrace there has arisen in Colorado one of the most constructive plans for the betterment of industrial relations that has been presented to any industry. We refer to the Colorado Fuel and Iron Company's employes' representation plan established in 1914. At that time it was referred to as a "unique experiment" and was most thoroughly condemned as impractical.

That employe representation has stood the test in the mining industry is evidenced by the large number of mining companies, particularly metal mining companies, that have adopted it in some form. These include the Phelps Dodge Corporation's plan at both its Burro Mountain plant at Tyrone, N. M., and its Arizona properties; the Tennessee Copper Company; Bethlehem Steel Corporation; the Davis Coal and Coke Company; the Frick Coal Company; International Harvester Company (mining properties); Reading Iron Company; the Cambria Steel Company; the Standard Oil Company; Bunker Hill & Sullivan Mng. & Concentrating Company; the Tomboy Gold Mines, Ltd.; the Down Town Mines Company; and many others.

The Division of Industrial Cooperation of the American Mining Congress has for the past year been making an earnest study of the question of industrial relations, not with a view to securing a general panacea but for the purpose of finding out just what the mining industry is doing to solve its industrial problem, the correlation of this information into a report and its dissemination to the public generally and particularly to those mining companies that have no definite plan of industrial relations. It is indeed surprising how little the mining industry itself, not to mention the consuming public, knows of what is being done by individual mining companies in the matter of industrial relations.

One of our leading trade publications editorially commends the policy of the Pennsylvania Railroad System and says: "If anyone should arise and propose such a plan to the average corporation, he would be looked upon as dangerous. * * * It would be an interesting experiment to try to see whether or not they would apply to your business, if it is such that you have any interest in the matter. In our opinion the miracle is already worked; the airship is invented. Is it of any use to you?"

The mining industry is not so far behind the times as the Engineering and Mining Journal-Press' editorial of November 17 would indicate. Many mining companies are as progressive as the Pennsylvania Railroad. A few of them have been pioneers in advancing this plan that the Pennsylvania Railroad is just now advocating. The public generally is convinced that disputes between labor and capital, with their attendant suffering and tremendous cost, must be eliminated; mine operators are demanding with steadily increasing vigor that there shall be a new relationship between employers and employes—a relationship that will eliminate bitter disputes. The mining industry as a whole is determined to eliminate that friction which has resulted in the yearly and costly coal strikes, the horrors of the Herrin massacre, and the voice of dissatisfaction that has well-nigh drowned conservative constructive principles in this country.

The Division of Industrial Cooperation of the American Mining Congress will continue its work, and this recent editorial convinces the Division more than ever of the great necessity for educating not alone the consuming public and the mining industry itself but the mining trade press, as to what the industry is contributing to a plan that will go far in securing industrial peace.

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### *INCREASING USES OF SILVER*

IN these days of scientific salesmanship it is rather unusual that any article of accepted merit shall not increase its sales in proportion to the general increase in business. Intense advertising campaigns and high-grade salesmanship develop greater demands on the part of the public for various kinds of merchandise.

The use of articles formerly classed as luxuries, but which through increased ability to buy have become necessities in almost every line have increased enormously.

It is a startling fact to know that notwithstanding the enormous increase of consumption in almost every other line that the use of silver for manufactures and the arts has practically remained stationary. Were it not for the increased use of silver in photography, in particular relation to the moving picture business, the records would show a very marked decrease in the amount of silver used for industrial manufacturing purposes and in the arts. In 1911, 32,013,685 ounces of silver were used in manufactures and the arts.

During the 12 years, 1911 to 1922 inclusive, the average use of silver in manufactures and the arts was 31,922,514 ounces.

Contrast this situation with the total annual volume of business in the United States. For purposes of general comparison it would doubtless be safe to say that this volume of business since 1911 has at least doubled. In this increased volume of business the consumption of other metals and minerals has increased more rapidly than other products. Silver alone of the metals used in industry and the arts has lagged behind.

In no other comparable line of production has consumption been at a practical standstill, and perhaps in no other line has there been so little effort to increase sales by stimulation of public interest, by advertising and through the higher arts of salesmanship. The difficulty has been that silver has been bought and not sold. Silver producers have been unorganized; there has been no concerted effort to show the public the advantages of the use of silver. Substitutes for sterling tableware have taken the place of sterling. Silver tableware manufacturers have changed their patterns so frequently as to make out of date the family silverplate to which additions would be constantly made if mentioned patterns were available.

If the plans proposed by the committee of silver producers growing out of the Reno conference are carried out there is little doubt but that there will be a very large increase not only in the demand for sterling silverplate, but in other lines where silver is used in the arts and industries.

## THE SPRING OFFENSIVE

THE United Mine Workers has fired its initial gun in its 1924 campaign against non-union coal fields, in its public announcement in favor of complete unionization of the mines and particularly the West Virginia coal fields. During the past two years when coal has been so much in the public eye, volumes have been written about the downtrodden coal miner. Forever has the public been harangued with the thought that this industry is infested with low wages and poor living conditions. While this is not true of the coal mining industry as a whole, it is particularly untrue of the non-union fields and vitally so in the West Virginia district against which the present offensive is being made.

A leading daily paper whose prestige is unquestioned recently published some statistics concerning the non-union coal mining fields. In part these statistics showed that at one small non-union bituminous coal property, where approximately 100 families are dependent upon the mine, 45 families own automobiles and that the preponderance of these cars is of the twelve and fifteen hundred dollar grade. Obviously the miners are paid a sufficient amount to support these automobiles. A recent two weeks' payroll at this same property showed the average weekly earnings per man as $50 net. This means that after deducting cost of clothing, groceries, miscellaneous purchases at the general store and cost of fuel, each worker on the average received $50 net. This presupposes gross wages of $65 to $70 per week and during the last two years the leading savings bank in this non-union district has shown steady increases in deposits each month.

This is a healthy condition and should not be disturbed by any organization that has nothing better to offer and whose determination to dominate will only cause a repetition of those disgraceful occurrences exemplified in the Herrin massacre. If the coal miner is downtrodden, unquestionably it is in the unionized fields where the union is entirely responsible and where its efforts have not materialized in anything like the benefits accruing to free labor.

## THE RIGHT TO WORK

THE United Mine Workers deny the right of individuals to work in the mines of the country unless they are members of the union. The check-off system is one method of compelling mine workers to become and remain members of the union. Other methods of compulsion also are used for this purpose. Any individual employed in a district dominated by the union who refuses to yield to this compulsion courts disaster and death. Yet, this is free America.

The Supreme Court of the United States has said that ***"life, liberty, property and the equal protection of the law, grouped together in the Constitution, are so related that the deprivation of any one of these separate and independent rights may lessen or extinguish the value of the other three. In so far as a man is deprived of the right to labor his liberty is restricted, his capacity to earn wages and acquire property is lessened, and he is denied the protection which the law affords those who are permitted to work. Liberty means more than freedom from servitude, and the constitutional guarantee is an assurance that the citizen shall be protected in the right to use his powers of mind and body in any lawful calling."***

The United Mine Workers have defied this principle. They have shown no respect for constitutional rights. In Illinois, Colorado, Pennsylvania, West Virginia, Ohio, Indiana, Kentucky, Maryland, Alabama and elsewhere, individuals who have tried to exercise their right to work, without subjecting themselves to the union, have been viciously threatened, cruelly molested, and, in many instances, fiendishly murdered.

This is a free country and a delightful country for those who are fortunate enough to have a trade or occupation that is not affected by union influence. If an individual wants to work without paying tribute to any organization, his government should accord him the full protection of the law. It is argued that unions have accomplished much that is good for the workers of the nation, and therefore all workers employed in industries where unions are dominant, and union wage contracts are in force, should contribute to union support. The theory is that all workers have derived certain benefits from union influence.

The same argument might be advanced with equal force and logic in the case of church support. Because the church has accomplished much that is good, people who are enjoying the benefits of its influence should be willing to support it. But just let the church begin a campaign of intimidation, violence and murder to compel people to support it, and see how quickly the Constitution would be invoked and its principles upheld by force of arms, if necessary.

If an individual wants to join church, he should not be prevented from so doing. If an individual wants to join the union, he should be permitted to do so. But he should not be permitted to molest another individual who does not want to join. He should not be permitted to destroy property because some employer hires non-union men or men of a particular religious faith. Intolerance on the part of unionism is as disgusting as intolerance on the part of any church.

***The right to work at any lawful occupation is as sacred as the right to worship deity.***

Unionism is all right if it abides by and is loyal to the Constitution and the government. It will harm no one and may exercise a good influence. The same is true of churches. If unionism will recognize this phase of its relationship and responsibility to the people of this country and to the government, labor troubles will disappear and public support will guarantee justice. But unionism can not continue to ignore constitutional principles by imposing its will upon the people by intimidation and force. Its leaders can not continue to teach that destruction is a proper means to secure the attainment of its purposes without inviting destruction. Sooner or later the people will reach the limit of their endurance, and force will be met with force.

## A NEW SLOGAN

THE beneficial effect of tariff on the mining industry has been so evident during the year the Fordney-McCumber tariff bill has been in effect that other industries which opposed some of the proposed tariffs on minerals have realized that their prosperity is more tied up with the prosperity of the mining industry than they had ever considered possible.

At the meeting of the Western Tariff Association, held in Denver early in October, ample warning was given that there was every probability of an attack on these tariff schedules in the coming session of Congress. This suggestion of a probable downward revision of

tariff met with cold response in this western district in which, in former years, it would have been received with loud acclaim.

This change in sentiment is due to the fact that you cannot convince a producer of manganese, or of tungsten, or of lead, or of zinc, or of any of those metals and minerals on which the industrial life of the West depends so largely, that a tariff, which has restored idle mines to operation and has kept the domestic market for the domestic producer and kept for the miners of the United States many millions of dollars annually which have heretofore gone to foreign countries, has not been of value to him.

The western producer of raw materials has had one year of first-hand experience with tariff protection and he wants it permanently. The slogan is not going to be to "take tariff out of politics" but to "take free trade out of politics" and sink it to the bottommost limbo of mistaken and forgotten issues.

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### *TAX SLASH PROPOSED*

SECRETARY MELLON has outlined to Congress in a letter to Acting Chairman Green of the Ways and Means Committee of the House how it is possible to lighten the burden of taxation next year by more than $300,000,000. Incidentally, he mentioned some measures that might make tax reduction impossible and increases necessary, and intimated that it might be for the best interests of the country to avoid those measures.

The opposition to his plan, if any develops, is likely to come from representatives of classes that pay nothing under present laws into the Federal Treasury, and from those who are seeking to obtain an entrance into the Treasury vaults. The plan seems to be one that would help all who are taxed under the present revenue law, from the smallest taxpayer to the largest, and the issue thus raised between those who are advocating liberal expenditures for one purpose or another and those who favor rigid economies until business and industry are completely stabilized, will furnish an unlimited supply of forensic material for the swollen columns of the Congressional Record of the Sixty-eighth Congress.

The Mellon plan for the revision of the administrative provisions of the revenue law embodies many excellent suggestions, the most important of which is, perhaps, the proposal for a Board of Tax Appeals to be independent of the Bureau of Internal Revenue. The American Mining Congress favored a similar amendment in a resolution passed by its twenty-third annual convention held at Denver, Colo., in November, 1920, which was endorsed by many business organizations and renewed by a resolution of the twenty-sixth annual convention of the American Mining Congress held at Milwaukee, Wis., in September, 1923. This plan should insure prompt review of tax cases by competent disinterested authority.

In view of the fact that the adoption of the Mellon program of tax revision will help all of the seven million income-tax payers, and that the rejection of the program may involve reaching into their pockets for additional revenues, it is hardly likely that Congress in its wisdom will agree to the latter course, and thus invite the political disaster which seven million taxpayers and their dependents could bring upon some of its members. Adoption of the Mellon program offers the wisest and safest course.

### *THE IMMIGRATION PROBLEM*

WE call particular attention to the article on immigration which appears elsewhere in this issue. This article embodies the consensus of opinion as expressed by leaders of the mining industry, condensed and harmonized in such way as to show the best thought of the mining industry upon this question.

A very general agreement is expressed with reference to the careful selection of immigrants before embarkation, but a serious question is developed by the fact that many foreign nations will not permit such an examination, contending at least that it is a function of their own government to say who shall depart therefrom.

Assistant Secretary of Labor Henning in his Milwaukee address made a better explanation of this refusal to permit examination on the part of some countries who are anxious to export their undesirables and to keep the law-abiding and thrifty at home.

It is equally the province of this country to say who shall be admitted and we shall be thoroughly justified in laying down the rule that no person shall be admitted into this country from countries in which permission is not granted to ascertain before departure the qualifications of the proposed immigrant.

MINING CONGRESS JOURNAL has no sympathy for those who advocate unrestricted immigration as a means of curtailing the power of the Labor Union. It believes that our Government possesses ample powers to prevent any activity by a labor union which is inimical to the public interest and except as organized labor does transgress the public right there should be no interference with the great public service which can and should be accomplished through cooperative labor movement.

The great majority of opinions expressed by our members emphatically urge that the interest of the nation shall be paramount to the interest of industry.

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### *MAKING IT COMPLETE*

THE three elements which unite to make up the consumer's price of coal are: The labor cost of coal production; the transportation cost; and the capital charges incident to mine management and coal distribution.

The railways are being consolidated into a few big groups. Their rates are being prescribed by government. That industry, therefore, is controlled.

Mine labor now has a monopoly in thirty out of thirty-five coal districts, according to the Coal Commission. The latter recommends that the difficulties in the way of the union's extension into the other fields should be removed. Thus the labor cost is controlled—or soon will be.

Now the Coal Commission recommends district consolidation and other details of control of capital's interest in the coal business.

Of course, control, in an economic sense, means the employment of the powers and practices of monopoly. Thus if we translate "control" into "monopoly," we find that the people are paying—in their coal bill—a monopoly transportation charge, a monopoly wage to miners, and are about to pay a monopoly charge imposed by capital.

Of course, if that is what the people demand—and if they are willing to pay the bill—the coal men who are allowed in future to run the coal business will not object. But it does sound like queer doctrine when it comes from a government that keeps on its statute books, as the essence of its philosophy, the Sherman Act which forbids monopoly and punishes restraint of trade.

## THE PUBLIC RIGHT IN COAL

A MEMBER of the U. S. Coal Commission in a recent address before the Academy of Political Science in New York discussed the coal situation in a forceful and comprehensive way if we accept as well founded the premise which he presents.

"The real issue," said the speaker, "concerns the sovereignty of the people in their relation to those who own coal mines or work in coal mines. Is the people's right to an uninterrupted supply of coal the dominant right? The people's right to a supply of coal at reasonable prices should be equally enforceable against a combination of operators raising prices or a combination of miners shutting down the mines."

The so-called right of the public to purchase coal has been accepted so long without question that it is regarded as an accepted fact. Upon what principle is this so-called right based? Apparently upon the theory that coal is a necessity and therefore someone else is called upon to supply that necessity. The fact is that coal is not a necessity except in the light that everything we need or use is a necessity. Wheat is a necessity, but it would take a long stretch of the imagination to suppose that Mr. A. who owns a wheat farm can be required by law to raise wheat thereon, or having raised wheat that there is any law to force him to sell it. To be sure the only purpose in owning the wheat farm is for the purpose of raising wheat and the only reason for raising wheat is that it may be sold and a profit upon its culture derived.

The only purpose in owning a coal mine is that coal may be mined therefrom, and the only purpose in mining that coal is that coal may be sold to someone at a profit. Mr. B., who owns that coal mine, is under no possible obligation to mine the coal, and, having mined that coal, he is under no possible obligation to dispose of it except upon terms that are satisfactory to himself.

These conditions must prevail under any well-regulated government which undertakes to protect the rights of property, and without protection to the rights of property there can be no government.

It seems high time that the public mind shall drift back to fundamental principles. The existence of government depends upon its power to tax the property of individuals, in order that such government may be provided with the funds necessary to its existence. The power to tax exists only in government and its exercise is based upon ownership in property, a right which it must protect in order to protect itself. The right of an owner to the proper use of his property is supreme subject to the power of government to tax. Having satisfied the demands of government, the rights of the owner are sacred. He may raise wheat or he may allow his lands to remain fallow. Having raised wheat he may store it for future use or he may dispose of it by mutual agreement with another who pays him the price which he is willing to accept. He cannot be required to dispose of his property except upon terms to which he consents. If the price is right, or, in other words, if the property is worth more to the purchaser than to the owner, he consents to a transfer of the property and there is no other theory upon which he may be required to dispose of it. In other words, price is the only incentive by which an owner may be induced to part with his property. A government, as such, may take it away from him through taxing power, but no other person has a right to divest him of his ownership.

Uncle Eben, on the Eastern shore, may need a horse to plant his tobacco crop. Mr. Sinclair Whitney in his nearby stable may own a horse which is being pampered until the next racing season. A horse is an absolute necessity to Uncle Eben if he is to raise a crop and provide a living for his family next winter. Does that necessity justify Uncle Eben in insisting upon his right to purchase at a fair farm horse price the racing horse from the Sinclair Whitney stable because of his personal necessity? An affirmative answer would be ridiculous.

The fact is that there is no right to purchase anything, except upon terms which are mutually acceptable. There is no right to purchase labor; no worker can be forced against his will to work. The workman can neither be forced to work nor can he properly force anyone to employ him.

The reasoning of those who insist that the public has a right to purchase coal if followed to its legitimate conclusion would require a purchaser to buy it. If I can be properly forced to sell my coal, then some other man must be forced to buy it. The fundamental principles of liberty require first, that no worker shall be forced to work against his will; neither to mine coal or to raise wheat. No owner of wheat or coal can be forced to sell it and no purchaser can be forced to buy it. All of these transactions and transfers must be made by the mutual agreement of the parties.

The duty of the government ends when it has protected each individual in the use of his property, the tax upon which supports the government, and the individual in his right to work or not to work as he sees fit. The right of the individual must not be coerced by any combination of capital or labor, and such coercion is, and should be, punished as criminal conspiracy. The privilege to buy coal, or wheat and all other necessities of life, not the right, but the privilege, is the blessing which is vouchsafed to us by a civilized government. Theoretically and fundamentally the right does not exist to take from any man against his will properly acquired property, and the government must protect that property right as a means to its own perpetuation.

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## "BLUE-SKY" AGAIN

THE Denison "Blue-Sky" measure will be the subject of further debate during the 68th Congress. However, there appears to be no disposition on the part of the proponents of the measure to remedy its glaring defects, which would injure legitimate business, and therefore the likelihood of its early passage is small. It is deemed to be poor policy to shave necessary governmental expenses in one direction and add unnecessary expenses in another by the creation of new tax-spending agencies.

# RAILWAY EXECUTIVES PLAN FOR FUTURE COOPERATION

*Enormous Volume of Traffic Fails To Yield Adequate Return—High Wage Levels and Strike Recovery Costs Responsible—Future Improvements Planned*

THE American Railway Association and the Association of Railway Executives held meetings in New York on November 8 for the purpose of reviewing the progress made by the railroads this year in meeting the transportation requirements of the country and of considering plans for rendering adequate transportation service during the coming year.

The steady improvement which has been accomplished since 1920 in spite of abnormal difficulties was shown in statistics which were made public following the meetings.

The executives of ninety-four different railroads whose total mileage equals 219,077, or ninety-five per cent of the total Class 1 railroad mileage, were present. They were optimistic over the results which had been accomplished, and the view prevailed that if they are to continue in their efforts to bring about still further improvements in service and facilities, they must be permitted to retain conditions which have enabled them to cooperate. This means that *the transportation act must be let alone and private management must have a further opportunity to fully demonstrate its ability to afford adequate service at lower rates.*

### *Volume of Traffic Enormous*

It was shown that the freight movement this year has exceeded all previous records. *Tendencies toward higher costs have been overcome by wide-spread economies; and in spite of the fact that railway wages are now higher than under government operation, the carriers have survived on a rate level that has allowed the greatest volume of freight traffic in history to move.* It was freely predicted that a respite from railway legislation would bring about an epoch-making period of railroad efficiency.

According to a report made by the directors of the American Railway Association, at least eight new records in transportation service have been made this year. (1) The carriers put in service from January 1 to October 1, 134,636 new freight cars and 2,963 new locomotives—a larger number than in any similar period during the last ten years. (2) A larger number of locomotives and cars have been repaired and put in serviceable condition than ever before in any equal period. (3) The number of cars loaded with revenue freight was 40,545,920—a new high record. (4) The average number of miles moved by each freight car daily during the period was higher by several miles than any previous equal period. (5) A record-breaking business was handled without serious car shortage or embargoes for the first time in years. (6) The amount of freight service rendered with each car was 511 tons carried one mile daily during the first eight months of 1923. (7) The number of tons of coal dumped at Lake Erie ports was 23,268,635 tons from January 1 to October 1, and this service was completed earlier than in any previous year. (8) A greater amount of railroad coal has been placed in stock-pile storage than was ever heretofore stored by the railroads. The amount of coal in stock piles on October 1 was 15,605,415 tons.

### *Return Not Adequate*

Notwithstanding this new high record of performance, the carriers have not been able to earn the fair return fixed by the Interstate Commerce Commission, according to the report. Compilations made by the railway association's statisticians show the annual rate of return for the carriers for the first nine months this year based on their property investment to have been 4.62 percent.

Earnings by sub-districts for the first nine months of this year with the percentage of return based on the property investment account in each district are as follows: New England district, $13,492,208, or 1.95 percent; Great Lakes district, $152,328,203, or 5.80 percent; Ohio-Indiana-Alleghany district, $173,986,027, or 5.35 percent; Pocahontas district, $37,546,584, or 6.02 percent; Southern district, $96,049,772, or 5.25 percent; Northwestern district, $68,887,075, or 3.05 percent; Central Western district, $125,903,975, or 4.40 percent; Southwestern district, $50,754,760, or 3.57 percent.

The net operating income of all Class 1 railroads for the nine-months' period represented an annual rate of return of 5.27 on their tentative valuation as fixed by the Interstate Commerce Commission.

### *Equipment Vastly Improved*

Reports showed that fewer locomotives were in need of repair on November 1 than there have been in years. The roads on November 1 had 54,080 serviceable locomotives. The number of serviceable locomotives in storage and ready to meet increased traffic demands numbered 2,517. The number in need of repair totaled 10,112, or 15.8 percent of the number owned. During the last half of October, 21,989 locomotives were repaired and turned out of the shops.

Despite record loading of revenue freight compared with previous years, the railroads on November 1 had approximately 24,000 surplus freight cars in good repair and immediately available for service when traffic conditions necessitated their use. Of this number more than 5,000 were coal cars.

More new freight cars and locomotives have been placed in service since January 1 this year than in any similar period during the last ten years. Up to November 1, a total of 155,872 new freight cars and 3,371 locomotives were installed in service. On that date the roads had 48,571 new cars and 942 locomotives in order.

### *Future Program Outlined*

In order to further improve transportation conditions and to make the best practicable provision to meet the transportation requirements as they develop, the following principles were adopted by the railroad executives as a continuing policy and working program:

1. That there be a continuation of the intensive efforts of the railroads to reduce the percentage of locomotives and cars awaiting repair.

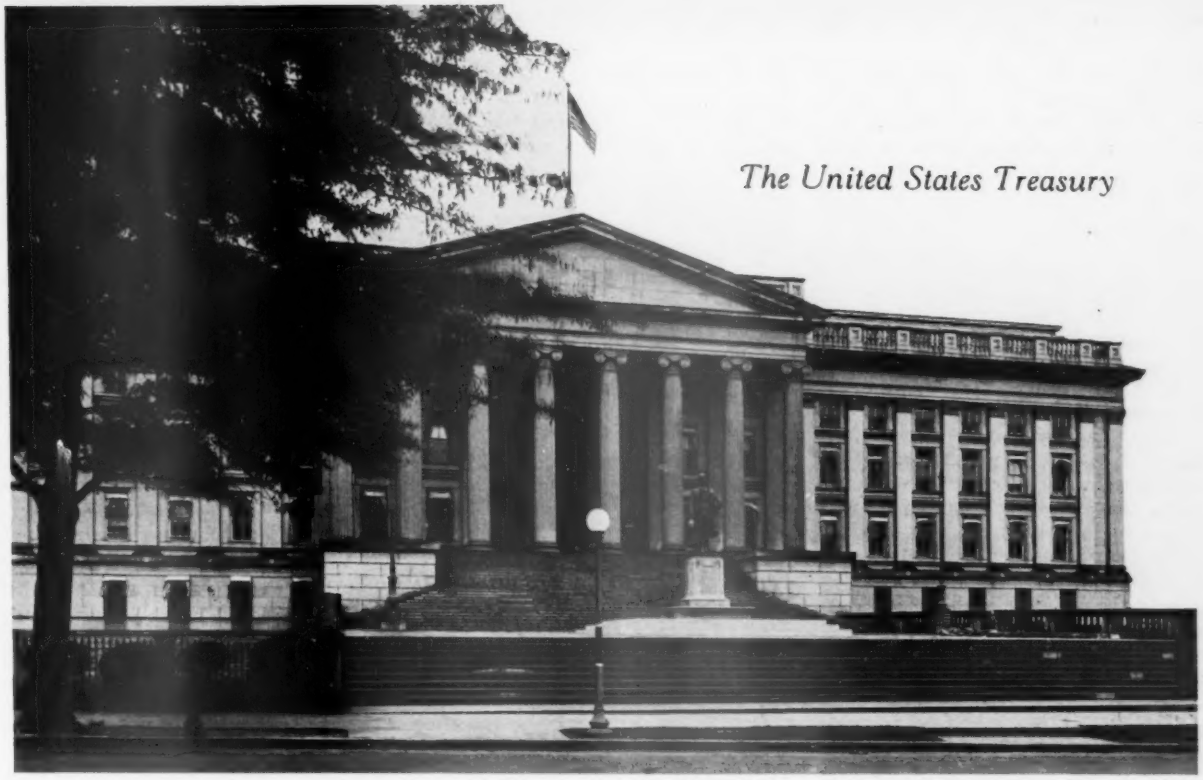
2. That there be increased supervision on the part of the railroads and greater cooperation with shippers to bring about better utilization of car capacity.

3. That there be continued the intensive effort to increase the average daily movement per freight car in an endeavor to make new records of achievement in the prompt movement of traffic.

4. Continued study and consideration of the possibility of greater joint use of facilities.

5. That there be a continuation of the complete cooperation of the railroads in carrying out the directions of the Car Service Division of the American Railway Association.

6. That active support be given by the railroads to all phases of the work of the Regional Shippers' Advisory Boards.



*The United States Treasury*

# SECRETARY MELLON URGES REDUCTION IN TAXES

## *Recommends Lower Normal Rates on Personal Incomes and Reduction of Surtaxes to 25 Per Cent—Adopts Mining Congress Proposal for Board of Tax Appeals*

FEDERAL tax reductions totaling $323,000,000 are proposed by Secretary of the Treasury Andrew W. Mellon in a comprehensive program submitted to Representative William R. Green, acting chairman of the Ways and Means Committee of the House of Representatives. The reductions proposed are contingent upon the deferment of soldiers' bonus legislation, the passage of which would prevent all consideration of tax reductions and require that ways be sought for increasing revenues.

### Small Taxpayers to Benefit

The program as outlined by Mr. Mellon would give substantial relief to small taxpayers by reducing the normal tax rates of 4 and 8 percent on personal incomes to 3 and 6 percent, respectively. It would provide for a 25 percent reduction in taxes on earned income as opposed to income from investments, trades or businesses, and would abolish all surtax charges against incomes of less than $10,000. It would also repeal the so-called nuisance taxes and taxes on admissions, and would eliminate the telephone and telegraph tax.

Mr. Mellon reiterates his recommendation for the reduction of surtaxes to a maximum of 25 percent on the ground that such reduction not only would permit capital to turn from tax-exempt securities to productive enterprises for investments, but would help the farmer in the matter of local taxes by discouraging the issuance of additional tax-exempt securities by states and municipalities.

### Administrative Remedies

Another important recommendation is that which suggests that there should be amendments to strengthen the act and eliminate methods heretofore used by taxpayers to avoid imposition of the tax. It is stated that the exact amount of additional revenue to the government which will be brought in by these amendments can not be estimated, but certainly the amendments will reach much income that heretofore has escaped taxation.

Treasury statistics show that the natural resources industries have always paid their full share of federal taxes as measured by their net incomes, so that it is not expected that this recommendation will affect provisions relating to these industries.

In accordance with the plan for a Tax Settlement Board or Tax Court of Appeals, recommended in resolutions of the American Mining Congress conventions at Denver in 1920 and in Milwaukee in 1923, the Treasury Secretary suggests the establishment of a Board of Tax Appeals in the Treasury, but independent of the Bureau of Internal Revenue, to hear and determine cases involving the assessment of internal revenue taxes. The full text of Mr. Mellon's tax program is as follows:

### Surplus Shown

"The fiscal years 1922 and 1923 have each closed with a surplus of about $310,000,000 over and above all expenditures chargeable against ordinary receipts, including the sinking fund and other similar retirements of the debt. This has been possible only through the utmost cooperation between the Executive and Congress, as well as among the executive departments and establishments, all of whom have united in a sincere effort to reduce the expenditures of the government. At the same time there has been a substantial amount of realization upon securities and other assets remaining over from the war, and the Treasury has succeeded in collecting

customs and internal revenue taxes in amounts somewhat exceeding original expectations. The result is that the government of the United States is firmly established on the basis of having balanced its budget each year since the cessation of hostilities, with a reasonable surplus each year after providing for fixed debt charges like the sinking fund, and stands squarely committed to the policy of including these fixed charges on account of the public debt in its ordinary budget each year, thus assuring an orderly reduction of the war debt out of current revenues.

"What has been done during the two years since the establishment of the budget system shows clearly what united effort can accomplish, and gives every reason for hope that the task to which the administration has set itself for this fiscal year can be successfully performed, namely, the reduction of the ordinary expenditures of the government to a total of not more than $3,500,000,000, of which about $500,000,000 will be fixed charges on account of the sinking fund and other retirements of the debt. To do this means reductions of about $170,000,000 in the estimates of expenditures submitted by the spending departments and establishments and the exercise of continued pressure all along the line for the utmost economy and efficiency in the operations of the government.

### Estimated Revenues

"Having these things in mind, the Treasury has been canvassing the estimates for the present fiscal year and for the succeeding fiscal years with a view to determining on the one hand what further reductions in expenditure it would be safe to count on in developing a tax-revision program, and on the other hand what receipts might reasonably be expected on the basis of existing law, assuming that no changes were to be made in internal taxes. In doing this it has had to keep in mind that under present conditions receipts from customs are abnormally high and that surplus war supplies have now been for the most part liquidated, leaving relatively little to expect on this account in the years to come. It has also had to keep in mind that many of the internal revenue taxes, as, for example, the higher brackets of the surtax, are so rapidly becoming unproductive that it is unsafe to assume that even with no changes in the law the revenues from internal taxes would be maintained. After taking into account all these considerations, and making the most conservative estimates about the yield of existing taxes and the possibilities of further reductions in expenditure, it appears that for this year, and for the next four or five years, there should be a surplus of something over $300,000,000 a year over and above all expenditures chargeable to the ordinary budget, including the fixed debt charges payable out of current revenues. This gives a reasonable margin not merely for tax revision but also for tax reduction.

"On this basis the Treasury has the following recommendations to make:

### Lighter Personal Taxes

"1. *Make a 25 percent reduction in the tax on earned income.*—The fairness of taxing more lightly income from wages, salaries and professional services than the income from a business or from investment is beyond question. In the first case, the income is uncertain and limited in duration; sickness or death destroys it and old age diminishes it. In the other, the source of the income continues; it may be disposed of during a man's life and it descends to his heirs. It is estimated that this amendment will mean a loss in revenue of about $97,500,000 a year, the greater part of which falls in the lower income brackets.

"2. *Where the present normal tax is 4 percent reduce it to 3 percent, and where the present normal tax is 8 percent reduce it to 6 percent.*—This affects all personal incomes and the loss of revenue comes largely from the lower brackets. It is estimated that this will mean a loss in revenue of $91,600,000 a year.

"3. *Reduce the surtax rates by commencing their application at $10,000 instead of $6,000, and scaling them progressively upwards to 25 percent at $100,000.*—This will readjust the surtax rates all along the line, and the Treasury recommends the readjustment not in order to reduce the revenues but as a means of saving the productivity of the surtaxes. In the long run it will mean higher rather than lower revenues from the surtaxes. At the outset it may involve a temporary loss in revenue, but the government actuary estimates that even during the first year, if the revision is made early enough, the net loss in revenue from all the changes in the surtaxes would be only about $100,000,000, and that in all probability the revenue from the reduced rates will soon equal or exceed what would accrue at the present rates, because of the encouragement which the changes will give to productive business.

### Higher Surtaxes Unproductive

"The readjustment of the surtaxes, moreover, is not in any sense a partisan measure. It has been recommended, on substantially this basis, by every Secretary of the Treasury since the end of the war, irrespective of party. The present system is a failure. It was an emergency measure, adopted under the pressure of war necessity and not to be counted upon as a permanent part of our revenue structure. For a short period the surtaxes yielded much revenue, but their productivity has been constantly shrinking and the Treasury's experience shows that the higher rates now in effect are progressively becoming less productive of revenue. The high rates put pressure on taxpayers to reduce their taxable income, tend to destroy individual initiative and enterprise, and seriously impede the development of productive business. Taxpayers subject to the higher rates can not afford, for example, to invest in American railroads or industries or embark upon new enterprises in the face of taxes that will take 50 percent or more of any return that may be realized. These taxpayers are withdrawing their capital from productive business and investing it instead in tax-exempt securities and adopting other lawful methods of avoiding the realization of taxable income. The result is to stop business transactions that would normally go through, and to discourage men of wealth from taking the risks which are incidental to the development of new business. Ways will always be found to avoid taxes so destructive in their nature, and the only way to save the situation is to put the taxes on a reasonable basis that will permit business to go on and industry to develop. This, I believe, the readjustment herein recommended will accomplish, and it will not only produce larger revenues but at the same time establish industry and trade on a healthier basis throughout the country. The alternative is a gradual breakdown in the system, and a perversion of industry that stifles our progress as a nation.

### Tax-Exempt Securities

"The growth of tax-exempt securities, which has resulted directly from the high rates of surtax, is at the same time encouraging extravagance and reckless expenditure on the part of local authorities. These state and local securities will ultimately have to be paid, principal and interest, out of taxes, thus contributing directly to the heavy local taxation which bears so hard on the farmers and small property owners. There is no immediate remedy for this within the power of Congress except the readjustment of the surtaxes on a basis that will permit capital to seek productive employment and keep it from exhausting itself in tax-exempt securities. The productive use of capital in our railroads and industries will also tend to bring lower costs for transportation and manufactured products, thus helping to relieve the farmer from the maladjustment from which he now suffers.

### Capital Loss Deduction

"4. *Limit the deduction of capital losses to 12½ percent of the loss.*—The

present revenue law limits the tax on capital gains to 12½ percent but puts no limit on the capital losses. It is believed it would be sounder taxation policy generally not to recognize either capital gain or capital loss for purposes of income tax. This is the policy adopted in practically all other countries having income tax laws, but it has not been the policy in the United States. In all probability, more revenue has been lost to the government by permitting the deduction of capital losses than has been realized by including capital gains as income. So long, however, as our law recognizes capital gains and capital losses for income tax purposes, gain and loss should be placed upon the same basis, and the provision of the 1921 act taxing capital gains at 12½ percent should be extended to capital losses, so that the amount by which the tax may be reduced by the capital loss will not exceed 12½ percent of the loss. It is estimated that this will increase the revenues by about $25,000,000.

"5. *Limit the deductions from gross income for interest paid during the year and for losses not of a business character to the amount the sum of these items exceeds tax-exempt income of the taxpayer.*—The 1921 act provides that interest on indebtedness to acquire or carry tax-exempt securities is not deductible. This provision is ineffective because a taxpayer may purchase tax-exempt securities for cash and borrow money for other purposes. It is felt also that so long as a taxpayer has income which is not reached for taxation, he should not be permitted to deduct his non-business losses from the income which is taxable, but should be restricted in the first instance to a deduction of these losses from his non-taxable income. The estimated increase of revenue from this source is $35,000,000.

"6. *Tax community property income to the spouse having control of the income.*—In some states the income of the husband is a joint income of the husband and wife, and each, therefore, is permitted to file a return for one-half of the income. This gives an unfair advantage to the citizens of those states over the citizens of the other states of this country, and this amendment seeks to restore the equality. It is estimated that it will increase revenues by $8,000,000.

### Repeal of Nuisance Taxes

"7. *Repeal the tax on telegrams, telephones and leased wires.*—This is the last of the transportation taxes established during the war, is a source of inconvenience to every person using the telephone or telegraph, and should now be eliminated from the tax system. This would mean a loss in revenue of about $30,000,000 a year.

"8. *Repeal the tax on admissions.*—The greater part of this revenue is derived from the admissions charged by neighborhood moving picture theaters. The tax is, therefore, paid by the great bulk of the people whose main source of recreation is attending the movies in the neighborhood of their homes. This would mean a loss in revenue of about $70,000,000.

"9. *Miscellaneous nuisance taxes.*—

"When a feller finds a friend."
—*Washington Star.*

Your committee may wish to consider the elimination of various small miscellaneous taxes which have an inconsiderable bearing on the general revenue of the government, but which are a source of inconvenience to taxpayers and difficult to collect; and possibly there are some articles of jewelry which according to our standard of living can not properly be denominated luxuries, such as, for instance, ordinary table silver or watches, which you may wish to exempt from the general tax on jewelry. There is not enough margin of revenue available to permit the repeal of the special taxes which are proving productive, but the law could be revised to good advantage and some of the nuisance taxes repealed without material loss of revenue.

"10. In addition to the specific recommendations which directly affect government revenues, there should be amendments to strengthen the act and eliminate methods heretofore used by taxpayers to avoid imposition of the tax. The exact amount of additional revenue to the government which will be brought in by these amendments can not be estimated.

### Board of Tax Appeals

"11. *Establish a Board of Tax Appeals in the Treasury but independent of the Bureau of Internal Revenue, to hear and determine cases involving the assessment of internal revenue taxes.*—This will give an independent administrative tribunal equipped to hear both sides of the controversy, which will sit on appeal from the Bureau of Internal Revenue and whose decision will be conclusive on both the Bureau and the taxpayer on the question of assessment. The taxpayer, in the event that decision is against him, will have to pay the tax according to the assessment and have recourse to the courts, while the government, in case decision should be against it, will likewise have to have recourse to the courts, in order to enforce collection of the tax.

"12. Changes should be made in the present law to simplify administration, make the law more easily understood, and permit a prompt determination of liability in a manner more satisfactory to the taxpayer.

"The benefits of the reduction will be distributed among all classes of taxpayers, and the revision generally will help to free business and industry of vexatious interference and encourage in all lines a more healthy development of productive enterprise.

### Soldiers' Bonus Unwise

"The present burden of taxation is heavy. The revenues of the government are sufficient to justify substantial reductions and the people of the country should receive the benefits. No program, however, is feasible if the government is to be committed to new and extraordinary expenditures. The recommendations for tax reduction set forth in this letter are only possible if the government keeps within the program of expenditure which the Bureau of the Budget has laid down at the direction of the President. New or enlarged expenditures would quickly eat up the margin of revenue which now appears to be available for reducing the burden of taxation, and to embark on any soldiers' bonus such as was considered in the last Congress or any other program calling for similarly large expenditure would make it necessary to drop all consideration of tax reduction and consider instead ways and means for providing additional revenue. A soldiers' bonus would postpone tax reduction not for one but for many years to come. It would mean an increase rather than a decrease in taxes, for in the long run it could be paid only out of moneys collected by the government from the people in the form of taxes. Throughout its consideration of the problem the Treasury has proceeded on the theory that the country would prefer a substantial reduction of taxation to the increased taxes that would necessarily follow from a soldiers' bonus, and I have faith to believe that it is justified in that understanding. Certainly there is nothing better calculated to promote the well-being and happiness of the whole country than a measure that will lift, in some degree, the burden of taxation that now weighs so heavily on all."

# MANGANESE "ENIGMA" SOLVED

THIS is my story and I'll stick to it." There is nothing in the world so dangerous as a fixed state of mind.

When the effort for tariff on minerals, including manganese, was being waged during the last Congress the pages of that splendidly informative publication, The American Metal Market and Daily Iron and Steel Report, frequently made denial of the existence of reserves of these minerals, especially manganese, in the United States. The showing of reserves made by producers of manganese had no effect on the opinion of this publication that the United States possessed no appreciable portion of this valuable mineral.

Since the tariff was so widely provided these same American producers who testified before the committees of Congress have been producing from these reserves in increasing quantities, but the opinion of this publication is unchanged, and in the issue of November 9, 1923, the following article is published as a serious statement:

"THE MANGANESE ENIGMA

**Not Enough Manganese Ore Imported to Produce the Ferromanganese Being Made**

The manganese situation in the United States continues as the outstanding metallurgical enigma of developments thus far this year. The mystery, so-called, concerns an explanation of the very large output of ferromanganese and the correspondingly very small receipts thus far this year of manganese ore.

According to the latest statistics the September imports of this ore were 35,175 gross tons. This compares with 36,138 tons in June, which was the largest this year, the receipts for the remaining seven months having been exceedingly small. The September imports bring the total to October 1 to only 162,413 tons, which is less than half the amount brought in, in the same nine months last year. The receipts this year, therefore, are at the lowest rate than in any year in at least the past 10 years. Despite this fact, production of ferromanmanese from manganese ore is exceedingly large.

The enigma referred to, therefore, resolves itself in the following problem.

Theoretically, only about 65,000 tons of ferromanganese could be made from all the ore imported into the country up to October 1, but there has been produced in American blast furnaces in that period over 193,300 tons of ferromanganese calling for at least 483,000 tons of ore.

In other words, only about one-third of the amount of ore had been imported to October 1 sufficient to produce the amount of ferromanganese already made up to that time.

One explanation offered for this unusual problem is that stocks of ore still existing in the country are being drawn upon heavily to make up the difference.

This seems to be the only reasonable solution and yet, after the history of the last two years is examined, it will be found that in 1921 and 1922 the amount of ore received was about equal to the amount of ferromanganese produced and that, therefore, it would be necessary to go back several years to explain the existence of over 300,000 tons of manganese ore held in reserve and now being used.

The explanation of this unusual situation is also not a scarcity of ore, because the receipts of manganese ore into Great Britain in the same period this year or to October 1 have been in direct and strong contrast to the importations into this country, or in other words, British receipts this year have been over twice what they were last year, whereas American receipts this year have been only half of what they were last year. In actual figures the British receipts of October 1 this year have been 377,925 tons as compared with 187,355 tons to October 1, 1922."

The explanation of this situation is the set of facts not touched upon in this article. It is the same explanation which was given to the committees of Congress by those same producers when they stated they could supply a large proportion of the domestic market for manganese. They are supplying it and the answer of the so-called "enigma" lies in the production which is coming out of the manganese fields of Virginia, Arkansas, Montana, Colorado, New Mexico and many other states.

There is a well-known and time-tested story which will bear repetition once more because it is so thoroughly apropos. A farmer on observing a giraffe for the first time said after a long contemplation: "Pshaw, there ain't no such animal."

## COAL DISCUSSION

Director George Otis Smith of the Geological Survey, former member of the Coal Commission, discussed the recommendations of that body before a meeting of the Academy of Political Science in New York. He stressed the point that coal mining is clothed with a public interest. He stated that in the anthracite industry, restraint of trade is unnecessary because overdemand maintains price levels, and that in bituminous no combination or monopoly of producers has ever controlled supply or prices. Immediate cause of exorbitant prices has been demanded from buyers at times when supply is inadequate. He recommended that consumers purchase coal on annual contract and store it. "The union is needed to protect the miner and the non-union fields are equally needed to protect the public," said Dr. Smith. "The real issue concerns the sovereignty of the people in their relation to those who own coal mines or work in coal mines. Is the people's right to an uninterrupted supply of coal the dominant right? The people's right to a supply of coal at reasonable prices should be equally enforceable against a combination of operators raising prices or a combination of miners shutting down the mines. We outlawed combinations of capital attempting restraint of trade or control of price. A country-wide combination of labor to create public distress would seem even less justified. When its half million members—a sixth of whom do not care to be American citizens—direct their efforts against the whole people, the union takes on the ugly aspect of civil revolt. Tying up commerce and shutting down industries is not a just or legal method of obtaining higher wages for one class of workers in half a dozen states, because the economic rights of all American workmen are greater than the rights of a small fraction. The miners' method of trouncing their employes is in fact giving a clubbing to the public. This dangerous weapon, whether a strike or economic force, does violence to the principles of popular government. The problem is to find a substitute for force. If either party is unmoved by moral pressure to furnish the public with coal arbitration must be compulsory. Rejection by the union of any arbitration last summer was disheartening to many who wished the union well. The public's right to coal demands protection from the strike. Compulsory arbitration would have afforded a more equitable adjustment of the anthracite strike than the terms finally agreed upon.

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"A nation so conceived and so dedicated
shall long endure." —*A. Lincoln.*

# RAILROADS UNJUSTLY ATTACKED BY DEMAGOGUES

## *Interference with Law of Supply and Demand Damaging—Nationalization Schemes Oppose Constitutional Principles*

By W. H. FINLEY
*President, Chicago & Northwestern Railway Company*

PROSPERITY has been defined as a balanced condition in industry, or a free exchange of products on the basis that in every fair bargain both parties gain. From the center to the circumference of this civilization we find the railroads of the country furnishing that transportation which makes for the free exchange of products and enables that balance to prevail which, moving forward with the increased production, results in what we call prosperity. I believe that the law of supply and demand is as immutable as the law that governs the movement of the heavenly spheres, and when interfered with it is bound to react. My training as an engineer taught me that the law of gravitation cannot be overcome or suspended, and I believe it is the same with the law of supply and demand.

Since our commercial relations are established, maintained and perpetuated by our transportation system, unwarranted attacks upon that system are particularly damaging. The railroads of the United States are performing a service at less than what is now recognized as a "service at cost" basis. Just now we are moving the greatest bulk of commerce in history, which is proof that the rates are not too high. Statistics prove that rates might be advanced to a reasonable basis without having adverse effect upon the commerce of the country and at the same time be so adjusted as to afford an income to the railroads sufficient to attract investors.

The mining industry is to be congratulated upon its contribution to the development of our country. That portion of your production which has become steel and found its way into labor-saving machinery, and into permanent structures, has become the significant feature of our national life. This is an age of steel. It has been said that man's place in civilization is determined by his ability to develop steel. Labor-saving machinery has wonderfully multiplied the product of man's effort. While the products of the mines form possibly 10 percent in value of our entire production—a large portion of this being coal which is consumed immediately—there still remains, in very permanent form, a large portion of the products of mines which will for many years contribute lasting benefits upon our civilization.

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A Bad Grade Crossing

Regulation tends toward so-called scientific rate construction, generally known as the distance tariff, with distance and commodity classification as the underlying factors of gradation between rates. If this had been the procedure at the beginning of rate construction, its influence would have had a direct effect upon the development of our cities and their industries. It is questionable whether it would not have largely restricted business to different localities than those in which we find it lodged today, and there is much question as to its expediency. The interest of the railroad company is principally in securing reasonable charges sufficient to meet the cost of transportation and at the same time in so adjusting the charges as to secure the maximum movement of commodities which necessarily would bring the maximum satisfaction to the public, and thus be truly in the public interest. It is with this purpose in view that traffic officers have long exercised a flexible judgment in making rates, utilizing every expedient possible to meet the public interest, and at the same time stimulate traffic and encourage industry. With a keen sense of relative values, they have, to a remarkable extent, established rates which, while not adhering strictly to any mathematical formula, have been the basis for that material development in the United States which has astonished the world.

It is highly important for the mining industry to give careful and thoughtful study to the matter of consolidations. There is no assurance that this or any other plan proposed will improve service, reduce rates, stimulate traffic, secure more equitable rate adjustments, or otherwise accomplish beneficial results. As to the matter of government ownership as an alternative solution of the transportation problem, it is believed that the public is too well aware of the part which politics would play in such a vast undertaking to permit Congress ever to go very far toward the realization of such a plan. Taxpayers are already carrying a heavy over-burden of taxation, and it seems inconceivable that they would look with favor upon a scheme which would add enormously to that burden.

### LET WELL ENOUGH ALONE

After considering all phases of the situation, especially the experiences of the last few years with government control and operation, and the results which obtain under private management when the government keeps its hands off of the railroads, there is ample ground for the conclusion that less government interference for the next few years should be the slogan of shippers and the consuming public as well as the railroads. High rates have been caused largely by conditions over which the carriers have had no control. The solution of the transportation problem most desired is that which will bring these conditions back under the control of the carriers, and which will afford ample inducements for their control by railroad managements without the necessity of recourse to law to compel efficiency.

Demagogic influences that have been at work in an attempt to mislead the public and becloud the real issues affecting railway transportation have served no useful purpose in clarifying the situation. The problem is serious. The public should know the facts.

The business men of the United States may well direct their energy toward a whole-hearted effort to reduce the legislative restrictions thrown around the railroad system; to use their influence toward the restoration of railroad credit and support every measure intended to bring justice to the railroads as wholeheartedly as they endorse any other right or privilege held by any person or institution under the Constitution of the United States.

# "MANAGEMENT LEADERSHIP THE KEY TO INDUSTRIAL COOPERATION"

*Key to Industrial Peace Lies Largely in the Hands of Proper Leadership on the Part of Management. There is no Panacea for Industrial Ills in Mining, but Application of Certain Practices Will Help Solve Problem*

By Sam A. Lewisohn
*Vice-President, Miami Copper Co.*

AS in other industries, the key to industrial cooperation in the mining industry lies largely in proper leadership on the part of management. It is evident that as management has assumed charge of the administrative functions, it is a part of its responsibility to secure the cooperation of its working forces. Thus it is incumbent upon the managing executives to surmount any difficulties they may meet in this field just as they surmount the many physical difficulties which are part of the day's work. Suspicion and class-consciousness engendered because of the strained relations of the past are part of these difficulties and there are, of course, many other difficulties which naturally spring from any attempt to organize individuals to perform work in a complex civilization. As for the executives themselves, they must throw aside their own emotional biases and class consciousness and approach these problems in the objective fashion that they approach other problems.

It is almost unnecessary to review what management can do in securing industrial cooperation. Any wide-awake executive, who is genuinely interested in this problem and is willing to give it the same attention that he does to other problems, can, in a short time, ascertain from successful practices elsewhere the most effective manner of securing the requisite teamwork and cooperation among the rank and file of his company's employes.

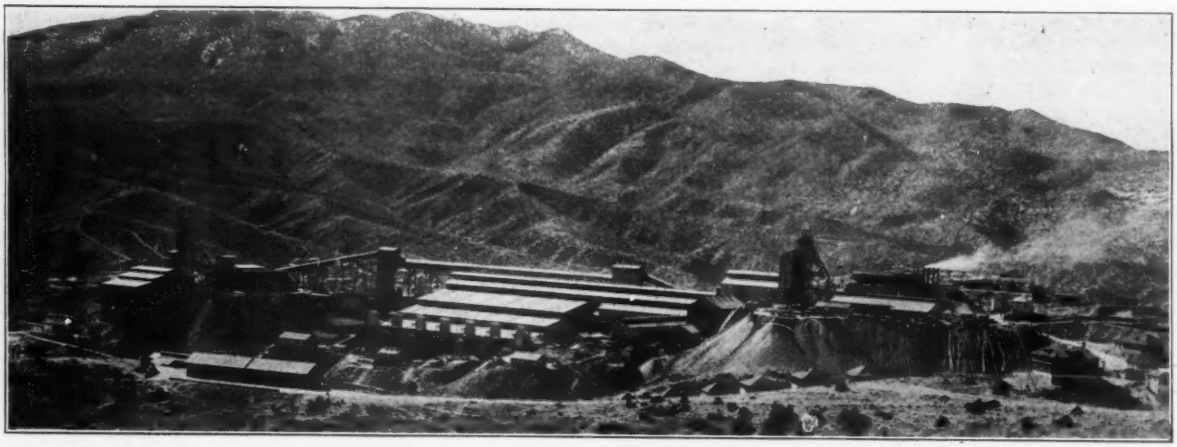
Sam A. Lewisohn

There is no panacea, but there are certain general practices that adapted to the particular needs of the situation are usually evidence of a proper attention to and a proper comprehension of personnel matters on the part of the particular management. They consist of such things as a good employment system, well-trained and tactful foremen, a continuous method of employe and foreman training, a proper system of transfer, a well-worked-out promotion system, proper vocational training, working conditions that are safe and hygienic, proper medical attendance. And then in addition, methods of introducing the new employe to his job and his fellow worker and of explaining the policy of the company to him—and most important of all, a proper method of preserving without any taint of patronization the status, the dignity and self-respect of the individual worker, whether such method be an informal system of consultation or a formal plan of employe representation.

Of course, it depends in each case upon the nature of the particular enterprise as to which matter shall be emphasized. But with all this, if a proper morale and teamwork is to be maintained there must be sustained leadership on the part of the manager—a leadership that is tactful and which awakens the confidence of the men. For we must remember that we are leading men, not handling "robots."

Profit sharing, benefit and pension systems, cooperative stores and Y. M C. A.'s are all useful means of assisting to this end, but only after the fundamentals above outlined have been given the requisite attention.

The main difficulty has been to impress executives, particularly resident mana



CONCENTRATOR AND MILL, MIAMI COPPER COMPANY

GENERAL VIEW, MIAMI COPPER COMPANY'S PROPERTY, MIAMI, ARIZONA

gers, with the importance of this subject. Once the fact has been grasped that this is a major and not a minor subject, a large part of the problem has been solved. For American executives are a particularly ingenious group. I do not know of an abler or harder working class of men, and there is no legitimate reason why they should not be able to solve the problem of industrial leadership as effectively as they have their mechanical problems.

Experience in many industrial and mining companies has conclusively proven that if the proper amount of attention is devoted to these problems and they are approached in a democratic and liberal spirit their solution is practically certain. For we are not facing here problems such as periodic depressions and unemployment which await future research for their solution, if they can be solved at all. These particular problems of securing employe good will can be solved by the kind of hard work, imagination and liberal spirit executives are wont to devote to other problems.

In almost all industries the focal point is the resident manager. But this is particularly true of the mining industry. Mines are apt to be more isolated than other industrial activities, and this very isolation of the mining industry causes the resident manager usually to be given more latitude than is given managers in other industries. If he is interested in using modern methods of personnel administration, he is apt to be free to institute any progressive policies he may decide are wise.

On the other hand, the most liberal board of directors is powerless to initiate a modern program in the handling of labor if it cannot obtain a manager who combines technical qualifications with an interest in and a grasp of modern methods of securing the cooperation of employes. It is true that the whole tone of an organization is largely colored by the temperament and attitude of the major executives and the "old man on top," but the managers in the field can exercise considerable independence of action if they have the ability and background to act on their own initiative.

A "hard-boiled" stand-pat resident manager, uninterested in this subject, can block any attempts to institute modern personnel methods. Let us take a concrete example. Suppose the directors have decided to adopt a modern employe representation plan. Unless the resident manager is sympathetic and has studied such plans elsewhere it would be futile to introduce it over his head. If, however, the manager decides to adopt such a plan, there is a reasonable chance that the executives at home will not interfere with him.

***Industrial cooperation includes such basic fundamentals as a good employment system, well-trained and tactful foremen, a continuous method of employee and foreman training, a proper system of transfer, a well-worked-out promotion system and working conditions that are safe and hygienic.***

It is therefore most important that engineers who are to occupy executive positions in the mining industry receive a thorough training in modern methods of handling labor, and a background in the whole subject of the relations between management and labor.

The great difficulty is that in spite of an increasing emphasis on this problem of human relations, the overwhelming importance of this aspect of our industrial activities has not been as yet wholly grasped. As yet it seems to many as subordinate to other problems, financial, sales, purchasing, accounting, etc., that are perhaps more directly related to large financial results. But even though for argument's sake we grant the premise that these latter problems are of greater immediate financial interest, to consider the problem of human organization as therefore of less fundamental importance is to have an entirely false sense of perspective. It is not always the large parts of the machine that cause the trouble. Engineers have concentrated much attention upon the perfecting of the bearings and working parts of machines. In fact, it is only by solving the problem of friction that certain machines have been made at all practicable. There is no problem of greater importance from a sound perspective than making certain that the ball bearings of our human industrial structure are properly designed, properly constructed and properly oiled.

## NEW MINT DIRECTOR

To succeed F. E. Scobey as Director of the Mint, President Coolidge has selected Robert J. Grant, a mining man of long experience. Mr. Grant has been superintendent of the Denver mint since 1921. He is 61 years old, and has been engaged in mining, particularly gold, silver, lead and zinc, for 35 years. He has been connected with mining interests in this country, Canada and Mexico, and in 1904 was associated with Herbert Hoover in gold mining in Australia.

# MINING CONGRESS SEEKS RATE RELIEF FOR BASIC MATERIALS

## *Demands That All Basic Commodities Share in Any Rate Reductions—Questions Propriety of Commission's Investigation of Grain Rates—Urges Broad Inquiry*

THE Interstate Commerce Commission has voted to deny the request of the American Mining Congress, made in its behalf by J. F. Callbreath, secretary, under date of November 2, that the Commission enlarge the scope of its investigation in the matter of rates on grain and grain products to include rates on all basic commodities. The Commission refuses to institute a general inquiry into the freight rate structure. In a letter to the American Mining Congress, Chairman B. H. Meyer states that the Commission "does not see its way clear to take the action requested."

### Relief Justified

The request made by the Mining Congress was predicated upon these factors: (1) That all producers of basic commodities should have an equal opportunity to benefit from any rate reductions which may be found possible; (2) that basic raw materials which in fabricated, refined or finished form must be transported from one to five times at higher rates before reaching the ultimate consumer; (3) that in the case of the mines, rate reductions would permit the extraction of lower grade ores from greater areas and thus would tend to increase the carriers' potential tonnage; (4) that stimulated production of basic commodities would tend to increase the volume of all classes of traffic taking higher rates as well as passenger traffic; (5) that stimulated production of basic commodities would provide better home markets for the farmers; (6) that the consideration of adverse market and economic conditions as they affect producers of grain and grain products should apply with greater force with respect to producers and shippers of all other basic commodities.

The Mining Congress states that it is not prepared to allege that the revenues of the carriers as a whole have reached a level where a reduction in rates can be effected without impairment of the transportation service.

In his letter to B. H. Meyer, chairman of the Commission, Mr. Callbreath said:

### Equal Treatment Asked

"With reference to the nation-wide inquiry into rates and charges of railroads on grain and grain products which has been announced under the Commission's investigation, Docket No. 15263, it is understood that the Commission will confine its investigation to these commodities alone, and that shippers of other basic commodities will have no opportunity to be heard at this time.

> *"Low-grade ores, the mining and treatment of which have been rendered unprofitable, are always far greater in quantity than the high-grade ores. Therefore, concessions in rates on ores would be in the interest of conservation. When metal mines are closed down, the railroads lose, not merely the revenue from freight on ore, but also that for hauling in coal and other supplies, and from passengers. In many cases it would be found worth while for the railroads to haul ore free, if by so doing the incidental business could be retained."* From brief of The Colorado Metal Mining Association in the Reduced Rates Case, 1922.

"We seriously question the propriety of giving any single class of shippers or any single industry first claim on any reduction in rates which may be justifiable in the light of present transportation conditions and increased earnings of the carriers. We believe all producers of basic commodities should have an equal opportunity to benefit from any rate reductions that may be found proper.

"If, as the result of this investigation, reductions in the rates on grain and grain products are contemplated it would seem pertinent to inquire into the question of whether or not such reductions would result in re-allocation of the transportation burden. In other words, will reductions in these rates compel shippers of other commodities to bear a relatively greater burden? Also, it would seem pertinent to inquire into the question of whether or not such reductions would tend to prevent needed reductions in rates on other commodities, especially those low-grade basic commodities which constitute the beginnings of all traffic such as ores, sand, gravel, stone, clay, crude petroleum, logs and pulpwood.

### Low-Grade Commodities

"It is difficult to understand how the Commission can arrive at a fair conclusion on the matter of reduction in rates on grain and grain products without spreading its inquiry to other commodities. It is assumed that the rates on agricultural products bear a definite relationship to the rate structure as a whole, and that readjustment of these rates alone would disturb that relationship. It may be found that these rates in and of themselves are not compensatory to the carriers for the service rendered, particularly to carriers in the western district where large sparsely populated areas are served. In such event, reductions could be justified only on the ground that a certain tonnage, which otherwise would be lost, is needed in order to make the aggregate revenues of the carriers compensatory; and such an argument would apply with equal force to other basic commodities.

"Articles of low grade, and heavy bulk in comparison to their value, frequently receive relatively favorable rates because higher charges would not induce them to move at all and carriers would lose this tonnage. Tonnage is frequently developed by the making of commodity rates on lower than normal bases and this practice has been sanctioned repeatedly by the Commission in its opinions. In the instant case, however, it has not been alleged by the advocates of reductions in rates on grain and grain products that such reductions are needed in order to develop tonnage. Instead, it has been asserted that reductions are needed primarily to afford relief to the farmers who are suffering from low prices resulting from unfavorable economic conditions. It has been recognized generally that the real purpose of the Commission's investigation is to ascertain whether or not the distress of the farmers can be relieved somewhat by lower rates on their products; and this reason should apply with equal force in the face of producers of other basic commodities who are handicapped by unfavorable prices and market conditions.

### Stimulation Desirable

"It is strongly urged, therefore, that the Commission include in its investigation the rates on all basic commodities; that all raw materials be given first consideration in the matter of rate reductions; and that a special effort be made to ascertain whether and to what extent, if any, products of manufacture and other traffic taking higher rates than basic raw materials should bear a relatively greater portion of the transportation burden. If the stimulation of movement of basic raw materials, as the result of rate reductions thereon, would

tend to lower the cost of manufactured articles and finished products to the consumer, to increase building and construction throughout the country, to lower costs of railroad supplies, materials and equipment manufactured or derived from basic raw materials, or to increase freight tonnage, both actually and potentially, such stimulation would be in the interest of the carriers as well as the general public.

"In the case of the mining industry every cent reduction in costs, whether it may be by lower rail rates, improved mechanical devices, lower costs of operation, lower power costs, lower taxes, greater efficiency, or what not, adds to the number of tons of rock that are commercially valuable as ore, to the wealth of the nation, and to the potential tonnage of the railroads. Immense bodies of mineralized rock are within 30 cents to $1 a ton of being commercially valuable as ore. All that is necessary to make this rock commercially valuable is to have something shaved off of the items of cost which accrue in extracting it from the ground and delivering it to a market. It is to the interest of the railroads and the general public to make possible the utilization of the enormous bodies of ore that are being left untouched because their utilization is impossible under prevailing conditions in which freight rates are a dominant factor.

### Unfavorable Conditions Prevail

"In 1913 the U. S. Bureau of Mines reported 6,387 active operators of metal mines in the United States. At the end of 1915, following the advance in rates made that year, the number was reduced to 4,322. At the beginning of 1922, the number had dwindled still further to 2,896. These figures indicate that more than one-half of the metal mining operations in existence prior to the war have been shut down or merged with larger low-cost mining enterprises. The closing down of mining operations results in decreased tonnage, both in inbound and outbound, for the carriers; loss of local markets for the farmers; loss of employment for local populations, and loss of revenue to the state and nation. The present condition of the railroads of the western district unquestionably reflects these results. The present condition of western farmers might also be attributed in part to the present unfavorable conditions prevailing in the mining districts of the west.

"The stimulation of western mining through rate reductions would benefit the railroads, the farmers and the public. The railroads would benefit through an increase in inbound traffic, such as supplies, equipment and passenger, and through an increase in potential future tonnage. The farmers would benefit through increased local market demands for their products and through the increased movement of freight which would tend to lessen the burden of transportation costs applicable to farm products. The public would benefit through the restoration of mining operations that have been idle which would furnish employment for the people, revenues to the government, and additional raw materials for the country's manufactures.

### Restrictions Detrimental

"Basic raw materials constitute the beginnings of freight traffic. If freight

B. H. Meyer,
*Chairman, Interstate Commerce Committee*

rates restrict the production of these raw materials or hamper their movement, the effect of such a condition reacts to the detriment of the railroads all along the line. If freedom of movement of these raw materials tends to stimulate business and increase the volume of traffic to which higher rates are applicable, there should be no question as to the propriety of investigating the rates and charges on all basic commodities with a view to bringing about reductions which would insure the greatest freedom of movement consistent with sound public policy. If the Commission's present investigation should result in reductions in rates on grain and grain products, there is grave danger that the freedom of movement of all other basic commodities would be further hampered by a re-allocation of the transportation burden.

"For these reasons it is strongly urged that the Commission enlarge the scope of its investigation to include rates on all basic commodities so that all factors may be considered and all producers and shippers of raw materials may have an opportunity to be heard."

### Commission Replies

The Interstate Commerce Commission, at its regular formal conference November 7, voted to refrain from instituting a general inquiry into the freight rate structure. No announcement was made outlining the reasons which impelled it to take this action. In his reply to Mr. Callbreath, Chairman Meyer merely said that the Commission does not see its way clear to grant the request that all basic commodities be considered. But the Mining Congress, believing its position to be unassailable, reiterated its request on November 12, and demanded that adverse market and economic conditions be given the same force and effect in the consideration of rates on raw mine products as in the present investigation of rates on grain and grain products. The contentions of the Mining Congress were outlined by Mr. Callbreath to the Commission as follows:

### Market Conditions

"With reference to your letter of November 7, advising that the Commission does not see its way clear to enlarge the scope of its investigation in Docket 15263 to include the rates on all basic commodities, we wish to call your especial attention to the fact that the Commission has held repeatedly that the reasonableness of rates can not be gauged solely by the ability or inability of shippers, under depressed prices, to market their products at the existing rates with a reasonable margin of profit.

"If it is now the intention of the Commission to abandon this principle and if the purpose of the present investigation is to ascertain whether or not the carriers can absorb or neutralize the economic difficulties of an industry, the American Mining Congress demands that all basic industries be treated alike, since the hardships and losses caused by adverse market conditions and abnormal costs have been suffered by all.

### Carriers' Revenues

"The American Mining Congress is not prepared to allege that the revenues of the carriers have reached a level where a reduction in rates can be effected without impairment of the transportation service. But if the Commission shall

find that the carriers' earnings will stand a reduction in rates, and such reduction is granted to grain and grain products exclusively, the American Mining Congress will deem it necessary to file a formal complaint with respect to rates on all raw mine products, and will expect the Commission to consider that adverse market and economic conditions have the same force and effect as in the present investigation.

"Basic raw materials, which in fabricated, refined or finished form must be transported at higher rates (frequently several times over before reaching the ultimate consumer), unquestionably are entitled to consideration.

"COAXING" RATES NECESSARY

"A transportation company might well afford to transport iron ore from the mines of Minnesota to the furnaces at less than cost of service if such a measure was necessary to enable the ore to move, if thereafter that company was to have the transportation of the pig iron to the steel mill, the steel billets to manufacturing points, the structural steel to Kansas City, Mo., or elsewhere for building and construction purposes, and the tools, machinery and implements to the mining and farming centers.

"A transportation company might well offer a special inducement for the shipment of lead ore from the mine at Wallace, Idaho, to the smelter, if thereby it is to have the transportation of the lead matte to the refinery, the refined lead to the manufacturing plants, and the manufactured lead products to the ultimate consumers in the various sections of the country, with the higher rates which attach to these higher cost products.

"A transportation company might well establish lower rates on zinc from Joplin, Mo., and Picher, Okla., in order to stimulate a greater tonnage of this commodity, if thereafter it was to haul galvanized iron and other zinc products used for building and other purposes, and if thereby it induces a larger tonnage of inbound supplies and a greater passenger travel.

COMPLETE STUDY URGED

"It may be counted a waste of energy that lead ores should originate at the Wallace, Idaho, mine requiring a transcontinental haul, when lead ores may be mined more cheaply in Australia and shipped to coast points by water for delivery by rail to interior points at a far much less price; but if the typical Wallace, Idaho, mine is not permitted to produce lead at a profit, it means that the greater part of a state's population will be unable to consume goods of various kinds manufactured at different points upon which the railroads may charge higher freight rates and thus make a substantial profit.

"It is because of the well-grounded belief that lower rates on basic materials would add to the earning power of the railroads and stimulate all business that the American Mining Congress requests a complete study of what it considers to be a fundamental principle in rate making."

## A NEW PRINCIPLE IN FLEXIBLE COUPLINGS

The Falk-Bibby flexible coupling, exhibited for the first time at the American Mining Congress, Milwaukee, introduces a new principle into this class of equipment.

The majority of so-called flexible couplings are not flexible at all in the strict sense of the term, but derive their ability to transmit power between shafts which are in slight parallel or angular misalignment by actual displacement of rigid parts within clearances which are provided for the purpose.

The exception to this general rule lies in the class of couplings which utilize the properties of rubber or other soft materials to accomplish the desired result.

The Falk-Bibby coupling transmits power between two flanges by means of specially constructed grid springs of tempered steel. True flexibility is obtained from the elastic properties of these springs.

The coupling is capable of withstanding an unusual degree of parallel and angular misalignment of the shafts.

The special feature of this coupling, however, is its torsional resiliency and consequent shock absorbing properties obtained from the action of the springs which engage with specially constructed grooves around the periphery of the flanges. These grooves fit the springs at the ends farthest apart but flare towards each other.

Under a light load each bar or element of the spring is flexed between points which are separated by the maximum distance. The flexibility of the spring under these conditions is proportioned accordingly. As the load increases the springs wrap themselves around the walls of the inwardly flaring grooves which are especially curved for the purpose, so that increasing load shortens the effective span of each spring bar causing it to offer greater resistance to flection without increase of stress.

This produces torsional flexibility with increasing resistance to increasing torque and gives the coupling great power to cushion heavy shocks and to damp out torsional oscillations.

The working parts of the coupling are inclosed in a floating shell which is packed with lubricant.

The shafts can be aligned as easily as with flange couplings and can be disconnected in a few moments by simply releasing the shell and removing the springs around the periphery of the flanges.

## STORAGE BATTERY LOCOMOTIVES

In order to encourage the production of a safe and efficient type of electric storage-battery locomotive for use underground in coal mines, and with a view to displacing pit ponies in deep and hot mines, the Secretary of Mines for Great Britain has announced a prize of £1000 for the best vehicle submitted, the Bureau of Mines has been advised. Competition is open to manufacturers of any nationality. The contest opened the first of October and will close not less than six months thereafter. Conditions of the competition can be obtained from A. M. Clegg, secretary, Electrical Storage-Battery Locomotive Competition, Mines Department, London, S. W. I.

## OIL SHALE CLAIMS

Validity of mineral oil shale claims and their value is to be determined in two cases now before the Glenwood Springs, Colo., land office, according to announcement of Land Commissioner Spry. These cases are regarded as test suits, the outcome of which will affect disposition of several thousand acres of land which are now claimed for both mineral and homestead purposes.

## FAY RESIGNS FROM TAX APPEALS COMMITTEE

Announcement has been made by Mr. Albert H. Fay, mining engineer, of his resignation from special service in the Treasury Department and entrance into private practice as consulting mining engineer, with offices in the Insurance Building, Washington, D. C. He will specialize in mine and oil well valuation, depletion and amortization problems, and mine safety work.

## MINE PATENTS

A total of 1,055 patents, embracing 90,568 acres, under the mining laws, were issued during the last two years by the General Land Office.

GORGAS STEAM PLANT ON WARRIOR RIVER

# MUSCLE SHOALS—THE SALE OF THE GORGAS PLANT

By Honorable George W. Norris,
*United States Senator from Nebraska*

*The American Mining Congress is interested in a disposal of the Muscle Shoals project which will insure three things: First, an adequate return to the government for its wartime investment; Second, the development of power for the use of the mining industry and those industries which it serves through the great industrial regions of the South; Third, the maintenance of the nitrate plant in a condition of readiness to serve in time of war.*

*This article by U. S. Senator George W. Norris of Nebraska is devoted almost entirely to the first aspect of the Muscle Shoals problem.*

*Senator Norris, as chairman of the Agricultural Committee, has had before him and his committee all of the conflicting presentations in behalf of various proposals for disposal of the Muscle Shoals project for the last two years, and his conclusions are the result of mature judgment.*

*As an interesting corollary to this presentation there is also presented a careful analysis of the same matter from the Manufacturer's Record, the publication which so ably serves the industrial life of the South and expresses its views.*

SOMEBODY ought to tell the truth to the public about the sale of the Gorgas Plant by the Secretary of War. Mr. Ford's denunciation of this sale is so unfair, so unjust, so selfish, and is evidently intended to leave such a false impression, that the American people ought to know the truth regardless of how it affects Mr. Ford, the government, or the Alabama Power Company.

When the government was brought face to face with the probability of a shortage of explosives for war purposes, it immediately commenced to investigate various locations for the establishment of one or more plants for the extraction of nitrogen from the atmosphere. It was extremely important that such a factory should be located in the vicinity of some great water power, because power was one of the chief essentials necessary for the economical extraction of nitrogen from the air.

Muscle Shoals, in Alabama, on the Tennessee River, was selected as one of these places. Whether this selection was wise, or whether the matter was dominated by political consideration, is now beside the question. The fact remains that the President selected Muscle Shoals as one of the places where such a factory should be built.

This great power site is located in a section of the country where there were no existing power facilities. The government purchased large quantities of land upon which to construct the necessary buildings, not only for the installation of machinery, but for the homes of thousands of employes necessary for the construction of the plant and for its operation when completed. It was decided not only to construct two immense dams across the Tennessee River, but to build a large auxiliary steam plant. In order to do this work it was necessary to have a great amount of power solely for construction purposes. It must be remembered that it was a war proposition, and great speed was necessary. The closest place that any power could be secured was at a mountain settlement known as Gorgas, about 90 miles distant. Gorgas was not a town or a city, but a settlement in the mountains, at the mouth of a large coal mine. The only way to reach it was by river boat. All the land in the vicinity was owned by the Alabama Power Company. This company had located this steam plant there because it saved the shipment of coal. It owned not only the steam plant then in existence, but it owned the mine as well.

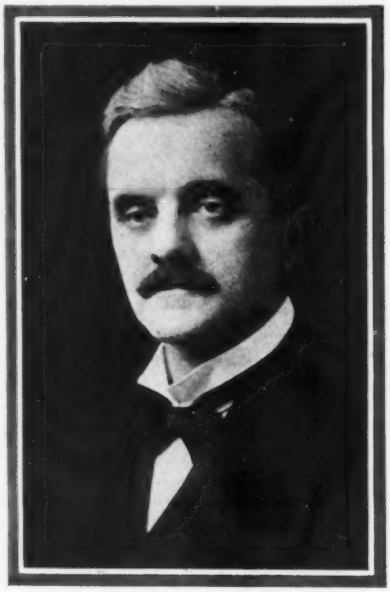
Gorgas was only one of quite a large number of similar plants, both steam and water, owned by the Alabama Power Company and located in different parts of Alabama. It was engaged in the production of hydro-electric energy from both steam and water, and had contracts with municipalities, street railways, mines, corporations and indi-

viduals in various parts of the state, supplying them with electricity for both lighting and power purposes. It did not have sufficient power to supply its existing customers and also furnish power to the government at Muscle Shoals for construction purposes. The result was that the government entered into a contract with the Alabama Power Company by which the government agreed to construct—and afterwards did construct—an additional power unit at Gorgas, which just about doubled the capacity of the plant. It simply built an addition to the then existing plant. The part formerly constructed by the Alabama Power Company and the addition constructed by the government are both under one roof and in one building. In addition to this the government constructed large transformers and built quite a number of other buildings. It built a large number of dwellings to house the additional force necessary—all built on land owned by the Alabama Power Company. The government buildings were not isolated from the Alabama Power Company's buildings. One house would be owned by the Alabama Power Company, the next one would perhaps be built by the government, the next one would be owned by the Power Company, and so on. The entire settlement was thus intermingled beyond the possibility of separation. It was in truth and in fact a real scrambled egg.

It must be remembered also, that the only object the government had in making this contract, was to get electric power transmitted to Muscle Shoals, to be used to construct the dams and the buildings at that place. It cannot be conceived that the government would have entered into this kind of a contract if it intended to retain its property after it was able to supply its own power at Muscle Shoals. The government now has at Muscle Shoals, on its own property, two steam plants fully equipped, modern in every way, capable of producing 120,000 horsepower. It has more power at Muscle Shoals today than it can possibly use in the construction of the dam that is still uncompleted.

When Mr. Ford made his bid for Muscle Shoals, he included the Gorgas Plant. Nobody has ever given a reason why it was included. His own friends and adherents have repeatedly admitted that they did not understand why he included the Gorgas Plant.

Outside entirely of whether the government had made a contract with the Alabama Power Company to sell its interest in the Gorgas Plant as soon as it had constructed its own steam plant at Muscle Shoals, it is perfectly evident to any fair minded, unbiased mind acquainted with the condition, that there is no reason on earth why the Gorgas plant should be coupled up with the Muscle Shoals plant. Even if the government should maintain its ownership at Muscle Shoals, and itself operate its huge plant there, which I hope it will, it has no use whatever for its interest in the Gorgas plant, so far as the Muscle Shoal plant is concerned. They are entirely distinct and separate propositions. It is perfectly evident that as far as the Gorgas plant is concerned, the government ought to buy out the Alabama Power Company or the Alabama



SENATOR GEORGE W. NORRIS

Power Company ought to buy out the government. And if it is contemplated that the government should buy the Alabama Power Company it must then be remembered that the Alabama Power Company has a large number of contracts for supplying electricity, and that the Gorgas plant is only one of a large number of other plants, all connected up together into one great system. If the government takes away from this company the Gorgas plant, it ought also in all fairness take all the other properties of the Alabama Power Company, or be compelled to pay to the Alabama Power Company or to its customers, damages that would naturally and logically follow if the Alabama Power Company were thus precluded from complying with its various contracts.

The fact that the Ford Corporation so insistently insists that it shall have Gorgas, is a strong indication of what I have repeatedly said to the effect that if the Ford Corporation got the interest of the government in the Gorgas plant, it would at once be able to sell its interest to the Alabama Power Company and thus come very near liquidating the $5,000,000 that the Ford Corporation in its bid has offered to pay for the entire Muscle Shoals property and Gorgas. In addition to this, there is at Muscle Shoals a large amount of personal property consisting of building material, machinery, etc., not necessary, and which is all included in the Ford bid, that could be sold for enough money which, added to the price that could be received for the Gorgas plant, would more than make up $5,000,000, thus giving to the Ford Corporation the entire Muscle Shoals property free of any expense whatever. It begins to look now as though the Ford Corporation only wants to include Gorgas in order to have something to sell to the Alabama Power Company for the payment of the $5,000,000 that it proposes to give to the government for Muscle Shoals. Muscle Shoals has no more use for Gorgas than has a wagon for a fifth wheel, and any business man or institution purchasing Muscle Shoals and also securing the government's interest at Gorgas, would, as a business proposition, dispose of the Gorgas plant at the very first opportunity, unless it wanted to get not only Gorgas but all of the property elsewhere owned by the Alabama Power Company.

It might be well also to take note of the fact that the government has realized a higher percentage of cost on the sale of the Gorgas plant than any other sale of war material made since the war. If Mr. Ford would pay at the same rate for Muscle Shoals, he would have to increase his bid about $80,000,000. He bitterly condemns the Secretary for selling Gorgas at about 80 percent of its cost, to the Alabama Power Company, while he is demanding that the government sell Muscle Shoals and Gorgas to him at about 5 percent of the cost, and give him, in addition, a lease for 100 years on the dam and furnish the money to build it at less than 3 percent interest per annum.

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## THE MUSCLE SHOALS SITUATION AND THE SALE OF THE GORGAS PLANT

*(Courtesy Manufacturers' Record)*

The action of the Secretary of War in selling to the Alabama Power Company, the Gorgas plant for $3,472,487.25 cash after due notice to Mr. Henry Ford had been given by the Secretary, should close to the credit of the government an issue which has been entirely too much confused.

From the very first discussion of Mr. Ford's offer in regard to Muscle Shoals, which included the Gorgas plant, the Manufacturers' Record took the position that whatever legal or moral rights might exist under any contract with the government should be rigidly observed

by the government. This government cannot afford even for any imaginary benefit, however great it might be, to dishonor its own contracts or to do anything which legally and ethically would not be upheld in the highest courts of justice.

The government and the Alabama Power Company entered into a contract during the war; the terms of that contract were plain. At that time the contract was considered to be of very great value to the government. Mr. Henry Ford, in endeavoring to secure at an absurdly low price the control of the Muscle Shoals situation on a 100-year contract, sought to include in the purchase the Gorgas Steam Plant, which neither legally nor morally could the government have granted except with the permission of the second party to the contract, the Alabama Power Company.

In closing the contract with the Alabama Power Company the Secretary of War has stood for integrity of contracts, and that is worth infinitely more to the people of this country than would have been the purchase of the entire Muscle Shoals situation by Mr. Henry Ford. With all due respect to Mr. Ford's phenomenal industrial development operations, and to his amazing genius as a business man, the Manufacturers' Record would far prefer that he should never come into the South for the establishment of a plant than that his coming should be based on the violation by the government of legal and moral obligations. Maintenance of honor in the observance of a contract by the government, as by individuals, is worth far more to national honor, and ultimately national wealth than a "short cut" to supposed wealth by violating contracts.

The original cost of the Gorgas plant, built during the high prices of war times, was as reported by the government about $4,750,000. Based on the advice of experts from the Ordnance Department and the Federal Power Commission in determining a fair value of the properties as they stand, the Alabama Power Company and the government agreed to a selling price of $3,472,487.25, an exceptionally small loss to the government on the sale of a war plant in contrast with the tremendous losses made in the sale of other plants.

In connection with the small loss on the sale of this plant it is of interest to study a report recently issued by the government showing the original cost and the sale price of many war properties. In a great many cases this report shows that the cost of properties was unknown when sales were effected. The report gives the following details:

**Sale of Land and Buildings as Reported to the Director of Sales**

January, 1919, to April 15, 1923, inclusive—Air Service

(*Chart continued on page* 443)

| Location and Description | Sale Price | Cost |
|---|---|---|
| Camp John Wise, Tex., Sewage Disp. Plant | $25,300.00 | $262,580.00 |
| Morrow Field, Detroit, Buildings | 7,100.00 | 52,000.00 |
| Taylor and Montgomery Fields, Ala., Buildings | 45,303.00 | Unknown |
| Hazelhurst and Roosevelt Fields, L. I., Buildings | 100,000.00 | Unknown |
| Detroit, Mich., Buildings and Equipment | 30,000.00 | Unknown |
| Morrison, Va., Hangars | 1,425.00 | 42,312.00 |
| Miscellaneous small items, various locations | 7,181.00 | Unknown |
| Miscellaneous small items, various locations | 12,144.96 | 61,353.66 |
| Total | $45,969.96 | $418,245.66 |
| Selling Price Total (Unknown Cost) | $182,484.00 | |
| Chemical Warfare Service | | |
| Niagara Falls, N. Y., Chemical Plant | $7,260.00 | $82,849.81 |
| Kingsport, Tenn., Plant Facilities | 13,748.00 | 249,638.58 |
| Kingsport, Tenn., Barracks | 6,000.00 | 95,000.00 |
| Edgewood, Md., Temporary Buildings | 45,533.31 | 981,984.80 |
| Charleston, W. Va., Bell Plant (Land and Buildings) | 300,000.00 | 800,000.00 |
| Cleveland, Ohio, Buildings and restoration of land to previous condition | 3,253.24 | 77,010.85 |
| Miscellaneous small items at various locations | 5,218.00 | 82,918.25 |
| Totals | $381,012.55 | $2,369,402.29 |
| Corps of Engineers | | |
| Miscellaneous small items at various locations | $975.00 | $3,268.00 |
| Miscellaneous small items at various locations | 350.00 | Unknown |
| Surplus Property, O. Q. M. G. | | |
| Miscellaneous small items at various locations | $10,185.72 | $34,851.72 |
| Salvage Division, O. Q. M. G. | | |
| Miscellaneous small items at various locations | $14,886.63 | Unknown |
| Construction Division, O. Q. M. G. | | |
| Unreported, Entire Plant | $24,100.00 | $50,360.16 |
| ———, Texas, Miscellaneous Buildings | 23,765.55 | Unknown |
| Camp Greene, N. C., Entire Camp | 25,000.00 | Unknown |
| ———, P. R., Buildings | 24,961.30 | Unknown |
| ———, Calif., Buildings | 28,448.00 | Unknown |
| ———, Texas, Buildings | 22,100.00 | Unknown |
| Camp Wheeler, Ga., Entire Camp | 67,500.00 | Unknown |
| ———, Calif., 151 Acres | 6,300.00 | Unknown |
| Unreported, Entire Camp less hospital and storage | 38,500.00 | Unknown |
| Unreported, Entire Camp less hospital and storage | 19,175.76 | Unknown |
| Unreported, Entire Camp less hospital and storage | 10,000.00 | Unknown |
| Unreported, Entire Camp less storage building | 66,000.00 | Unknown |
| Camp Logan, Tex., Entire Camp less hospital | 66,000.00 | Unknown |
| Gettysburg, Pa., Entire Camp Colt | 18,000.00 | Unknown |
| Columbia, S. C., Entire Camp Jackson | 17,000.00 | Unknown |
| Greenville, S. C., Entire Camp Gervier | 70,697.00 | Unknown |
| Ft. Douglas, Utah, 201 Buildings | 20,500.00 | 300,911.40 |
| Camp Wheeler, Ga., Buildings | 36,550.00 | Unknown |
| Camp Navesink, Buildings | 500.00 | 32,162.50 |
| Highlands, N. J. | | |
| Camp McArthur, Tex., Water, Sewer and Electric lines | 40,666.00 | Unknown |
| McKinley Park, Ten Buildings | 2,050.00 | 33,264.26 |
| Chicago, Ill. | | |
| Camp Doniphan, Camp Buildings | 60,500.00 | Unknown |
| Ft. Sill, Okla. | | |
| Ben Har Plant, Willoughby, Ohio, Buildings | 6,500.00 | 191,590.46 |
| U. S. General Hospital, Colonial, N. J., Government property | 106,940.00 | Unknown |
| Camp Bowie, Ft. Worth, Tex., Warehouse Area | 17,250.00 | Unknown |
| Camp Leach, D. C., Buildings | 30,500.00 | Unknown |
| Camp Mills, L. I., Buildings | 327,300.00 | Unknown |
| Camp Merritt, N. J., Entire Camp | 552,554.50 | Unknown |
| Carruthers Field, Tex., All Government Improvements and Buildings | 43,500.00 | Unknown |
| Payne Field, Tex., All Government Improvements and Buildings | 53,000.00 | Unknown |
| Camp Funston, Kans., 122 Buildings | 22,352.10 | Unknown |
| Camp Hancock, Ga., Storage Area | 42,210.00 | Unknown |
| Camp Dodge, Iowa, 503 Buildings | 29,282.00 | Unknown |
| Vancouver Barracks, 185 Buildings | 18,775.00 | 257,825.00 |
| Caldwell Rifle Range, N. J., Buildings | 15,000.00 | 200,000.00 |
| Camp Sevier, S. C., Buildings and Improvements | 40,000.00 | Unknown |
| Q. M. I. D., Jeffersonville, Ind., 14 Buildings | 2,155.00 | 69,812.37 |
| Washington Barracks, D. C., 12 Buildings | 1,607.00 | 70,659.00 |
| Ft. Caswell, N. C., 41 Buildings | 740.00 | 221,618.26 |
| Norfolk, Va., G. I. D., 117 Buildings | 4,000.00 | 40,500.00 |
| Chickamauga and Chattanooga National Park, Ga., and Ft. Oglethorpe, Ga, 392 Buildings | 2,600.00 | 1,563,646.00 |
| Camp Gordon, Ga., Land and Buildings | 504,277.47 | 10,805,199.87 |
| Williams Barracks, N. Y., Hospital Buildings and Improvements | 26,987.98 | 462,703.00 |

| Location and Description | Sale Price | Cost |
|---|---|---|
| Neville Island, Pa., 134,588 Acres and Improvents.... | 408,667.60 | 590,000.00 |
| Newport News, Va., 4 Bachelor Quarters..... | 20,000.00 | Unknown |
| Otisville, N. Y., Government-Owned Property..... | 67,300.00 | 1,650,723.00 |
| Speedway, Ind., Government-Owned Property..... | 27,510.00 | 672,570.83 |
| Gertner Field, La., Buildings and Improvements..... | 42,500.00 | 2,725,337.71 |
| Camp Humphreys, Va., 309 Buildings..... | 84,200.00 | Unknown |
| Detroit, Mich., Target Range..... | 254,100.00 | 17,273.32 |
| Camp Custer, Mich., Government-Owned Improvements ..... | 584,100.00 | 12,330,063.07 |
| Erie, Pa., Land and Buildings..... | 85,000.00 | 152,500.00 |
| Pasadena, Calif., Land and Buildings..... | 15,500.00 | 31,573.50 |
| L. I. City, N. Y., Cafeteria Building..... | 7,500.00 | 90,040.92 |
| Ancor, Ohio, 273,003 Acres..... | 62,344.36 | 105,220.00 |
| Camp Dodge, Iowa, 1200 Buildings..... | 251,000.00 | 5,867,647.63 |
| Camp Johnson, 450 Buildings..... | 36,215.25 | Unknown |
| Camp Sherman, Ohio, 199 Buildings..... | 28,580.40 | Unknown |
| Taliaferro Field, Tex., Buildings and Improvements.. | 35,502.00 | 1,439,377.97 |
| Barren Field, Tex., Buildings and Improvements..... | 24,000.00 | Unknown |
| Rich Field, Tex., Buildings and Improvements..... | 21,500.00 | Unknown |
| Camp Funston, Kans., 620 Buildings..... | 212,029.64 | Unknown |
| Camp Upton, N. Y., Buildings and Fixtures..... | 281,000.00 | 13,923,497.63 |
| Camp Grant, Ill., 328 Buildings..... | 50,000.00 | Unknown |
| Ft. Moultrie, S. C., 15 Buildings..... | 360.00 | 77,210.00 |
| Kearney, N. J., Buildings and Improvements..... | 11,569.04 | 283,428.40 |
| Camp Lee, Va., Buildings and Improvements..... | 241,948.04 | 12,000,000.00 |
| Charleston, S. C.,, Buildings and Equipment..... | 12,445.50 | 405,000.00 |
| Ft. Harrison, Ind., 149 Buildings..... | 19,169.50 | 151,080.00 |
| Hoboken, N. J., Buildings and Improvements..... | 14,100.00 | 244,614.00 |
| Governors Island, N. Y., Buildings and Improvements | 43,550.00 | 812,911.00 |
| Ft. Stevens, Oregon, 37 Buildings..... | 3,377.00 | 106,500.00 |
| Camp McClellan, Ala., 350 Buildings..... | 15,300.00 | 382,500.00 |
| Camp Humphreys, Va., 182 Buildings..... | 32,420.00 | 518,800.00 |
| Baltimore, Md., All Buildings..... | 298,637.28 | 1,909,000.00 |
| Camp Pike, Ark., 315 Buildings and Improvements... | 109,713.45 | 6,899,723.00 |
| Camp Dodge, Iowa, Buildings and Improvements.... | 35,808.95 | 2,832,423.80 |
| Camp Mercedes, Tex., Buildings and Improvements.. | 7,500.00 | 113,991.00 |
| Boston, Mass., R. R. Track, etc..... | 8,100.00 | 117,610.00 |
| Langley Field, Va., 12 Buildings..... | 300.00 | 102,240.00 |
| Ft. Douglas, Utah, 41 Buildings..... | 6,252.84 | 104,635.00 |
| Ft. Sheridan, Ill., Buildings and Improvements..... | 46,781.00 | 1,298,425.00 |
| Camp Kearney, Buildings and Improvements..... | 25,575.00 | 606,965.00 |
| Camp Pike, Ark., Buildings and Improvements..... | 55,250.00 | 5,799,737.00 |
| Pittsburgh, Pa., 62,507 sq. ft. Land and Buildings.... | 129,014.22 | 1,814,562.50 |
| Hawthorne Race Track, Buildings and Improvements. | 5,000.00 | 172,104.00 |
| Norfolk, Va., Buildings and Improvements..... | 18,751.50 | 997,862.00 |
| Morrison, Va., Buildings and Improvements..... | 20,000.00 | 1,703,000.00 |
| Camp Dix, N. J., Buildings and Improvements..... | 10,000.00 | 125,405.00 |
| Camp Funston, Kans., Buildings and Improvements.. | 45,341.94 | 90,000.00 |
| Chicago, Ill., Land and Building and Improvements.. | 855,000.00 | 4,065,912.00 |
| Camp McAllen, Tex., Buildings and Improvements... | 15,100.00 | 109,122.00 |
| Camp Shannon, N. M., Buildings and Improvements.. | 6,550.00 | 125,120.00 |
| Camp Lee, Va., Buildings and Improvements..... | 25,306.00 | 471,488.00 |
| Bureau of Standards, D. C., 7 Buildings..... | 2,003.37 | 63,245.00 |
| Miscellaneous small items at various locations..... | 189,004.07 | 2,776,732.25 |
| Miscellaneous small items at various locations..... | 1,059,503.08 | Unknown |
| Totals ..... | $5,128,345.11 | $102,888,146.84 |
| Selling Price Total (Cost Unknown)..... | $3,442,080.58 | |
| Ordnance Department | | |
| Erie, Pa., Parkview Hotel..... | $28,000.00 | $36,000.00 |
| ——, Portable Bungalows..... | 75,000.00 | 141,000.00 |
| Philadelphia, Pa., Knocked-Down Houses..... | 45,275.00 | 54,895.00 |
| Niagara Falls, N. Y., Building and Equipment..... | 12,000.00 | 160,092.00 |
| Elizabeth, N. J., Toluol Rect. Plant..... | 6,150.00 | 90,000.00 |
| Tacony, Pa., Ordinance Plant..... | 1,250,000.00 | 3,460,613.51 |
| Providence, R. I., Toluol Rect. Plant..... | 15,000.00 | 195,596.32 |
| Boston, Mass., Toluol Rect. Plant..... | 20,000.00 | 273,699.40 |
| Brunswick, Ga., Land and Incomplete Picric Acid Plant ..... | 815,000.00 | Unknown |
| Hammond, Ind., Buildings & Equipment..... | 900,000.00 | Unknown |
| Bridgeport, Conn., Buildings & Equipment..... | 500,000.00 | 1,365,400.00 |
| Bradford, Ont., Land and Buildings..... | 65,000.00 | 107,303.82 |
| St. Louis, Mo., Buildings & Equipment..... | 26,065.00 | 82,330.13 |
| Peru, Ill., Buildings & Equipment..... | 80,000.00 | 291,388.75 |
| Milwaukee, Wis., Buildings & Equipment..... | 185,000.00 | 580,847.25 |
| Montreal, Can., Buildings..... | 9,500.00 | 64,319.97 |
| Montreal, Can., Land ..... | 200,000.00 | 254,843.62 |
| Ancor, Ohio, Barracks Building..... | 7,710.00 | 128,552.17 |
| Nitro, W. Va., Plant..... | 8,551,000.00 | 60,000,000.00 |
| Woodbury, N. J., Dormitories..... | 9,205.00 | 203,832.50 |
| New York, 90 Acres..... | 4,000.00 | 48,570.42 |
| Chattanooga, Tenn., Buildings & Equipment..... | 110,000.00 | 212,112.71 |
| Amatol, N. J., Buildings..... | 5,800.00 | 98,331.00 |
| Little Rock, Ark., Power Plant..... | 235,000.00 | 490,000.00 |

*Chart continued on page* 443

Some of the losses reported are staggering in amount. For instance, there was one property in North Carolina which cost $221,618 which sold for $740; one property in Otisville, N. Y., costing $1,650,723 sold for $67,300; one property in Georgia costing $1,563,000 sold for $2,600. A Michigan property costing $12,330,000 sold for $584,000. An Iowa property costing $5,867,000 sold for $251,000. Camp Upton, in New York, sold for $281,000, while Camp Lee, in Virginia, costing $12,000,000 sold for $241,948; and Camp Dodge, $2,832,000, sold for $35,808.

The Nitro, W. Va., plant, costing $60,000,000, sold for $8,551,000, and a Tennessee plant costing $86,000,000 sold for $3,455,000.

In the light of such figures as these, the price secured by the government for the Gorgas plant is remarkably high, and it is to the credit of the purchasing company that it was willing to abide by the judgment of government experts in taking it at that price.

If Mr. Henry Ford, or any other individual, or any company desires to secure the Muscle Shoals development no one should be allowed to do so on any such terms as Mr. Ford has thus far proposed. The inherent value of Muscle Shoals, one of nature's great wonders, an asset of immense value to the entire country, should not be parted with by the national government except at a price somewhat commensurate with its real value. Nor should Mr. Ford be permitted to secure such a property on any financial basis other than backing it with his entire fortune, or with a sufficient amount of capital to protect the government and the country to the extreme. His suggestion of a $10,000,000 company to take over Muscle Shoals is in itself, and ought to be so regarded, absurd.

The same thing is true as to any other prospective purchaser. No company should be allowed to secure control of Muscle Shoals except on a financial basis sufficiently strong to safeguard the interests of the nation of a property so immeasurably valuable. Nor should any control be given for more than 50 years, though Mr. Ford demanded 100 years. Far better would it be for the government, instead of selling on a low basis of value, to maintain its ownership of that property and utilize it in one way or another for the safeguarding of the interests of the country by the production of nitrates in time of peace as well as in time of war.

| Location and Description | Sale Price | Cost |
|---|---|---|
| St. Louis, Mo., Buildings | 100,000.00 | 370,000.00 |
| Ives, Wis., T. N. T. Plant | 94,010.00 | 286,943.94 |
| Mt. Union, Pa., 20½ A & Building | 30,000.00 | 181,995.01 |
| Erie, Pa., Building | 85,000.00 | 152,000.00 |
| Minneapolis, Minn., Toluol Plant | 16,150.00 | 90,438.00 |
| Elizabethport, N. J., Buildings & Equipment | 400,000.00 | 793,653.69 |
| Perth Amboy, N. J., Buildings | 53,200.00 | 571,573.68 |
| Milwaukee, Wis., Phenol Plant | 146,000.00 | 1,199,918.97 |
| Madison, Wis., Buildings & Equipment | 207,745.00 | 625,305.66 |
| Erie, Pa., Frame Building | 37,500.00 | 440,069.07 |
| Little Rock, Ark., 479 Acres, Buildings & Equipment | 770,000.00 | 6,000,000.00 |
| Bridgeport, Conn., 3 Buildings | 61,000.00 | 176,036.28 |
| Aberdeen, Md., Buildings | 6,500.00 | 334,000.00 |
| Indiana Harbor, Ind., Buildings & Equipment | 33,000.00 | 184,766.63 |
| New Diggins, Wis., Buildings | 45,011.00 | 326,588.56 |
| Joliet, Ill., Toluol Plant | 25,000.00 | 197,616.45 |
| Jacksonville, Tenn., Buildings | 7,879.31 | 33,400.23 |
| Baltimore, Md., Buildings | 11,393.00 | 62,637.91 |
| Nashville, Tenn., Entire Plant | 3,455,000.00 | 86,000,000.00 |
| Mays Landing, N. J., Land & Buildings | 500,000.00 | 7,500,000.00 |
| Erie, Ohio, Buildings | 10,890.00 | 241,267.52 |
| Pedricktown, N. J., 45 Buildings | 4,758.65 | 103,500.00 |
| Hammonton, N. J., 221 Buildings | 4,264.95 | 81,200.00 |
| Plainfield, N. J., Buildings & Equipment | 15,000.00 | 101,899.47 |
| Raritan Ars., N. J., 71 Buildings | 8,395.85 | 496,817.17 |
| Findley, Ohio, Land & Buildings | 25,500.00 | 151,947.70 |
| Aberdeen Proving Grounds, Md., 3 Steel Buildings | 3,100.00 | 224,000.00 |
| Miscellaneous Small Items located at various points | 1,259,726.29 | 7,236,432.78 |
| Miscellaneous Small Items located at various places | 1,018,543.55 | Unknown |
| Totals | $18,856,729.05 | $182,503,737.29 |
| Selling Price Total (unknown cost) | $ 2,733,543.55 | |

# LOSSES SHOWN BY TREASURY STATISTICS

*Metal Manufacturers and Mining Enterprises Worst Sufferers—State and Local Taxes, Wages and Freight Rates Increased Despite Depression—Treasury Statistician Commends Judgment of Business Men*

THE enormity of the industrial slump of 1921 is clearly reflected in the statistics of income of corporations just released by the Treasury Department. The greatest sufferers from the business depression of that year were manufacturers of metal and metal products and the mining industry. 15,536 corporations engaged in the manufacture of metal and metal products reported. Of this number, 10,068 reported deficits aggregating $666,001,897. 16,108 mining corporations filed returns. Of this number, 12,478 reported losses totaling $407,284,812.

Despite these tremendous losses during 1921, state and local taxes paid by manufacutrers of metal and metal products amounted to $152,507,897, or $25,946,980 more than in 1919. State and local taxes paid by incorporated mining enterprises amounted to $86,549,035, or $17,330,058 more than in 1919. These figures show that during the most severe period of depression through which these industries passed, state and local governments continued to increase tax burdens by enormous percentages, thus contributing to the difficulties which the industries of the country were struggling to survive instead of adopting a fiscal policy which would not be detrimental to business recovery.

The enormous increase in wages subsequent to the war is reflected in the figures given by the department statisticians for the years 1919 and 1920. The returns of mining corporations show deductions for cost of goods and miscellaneous expense which total $3,752,180,376 for 1919 and $5,782,703,992 for 1920, an increase of $2,030,523,616. This increase was due largely to increased wages and freight rates. Compare this figure with the $407,284,812 losses of 1921 and the principal reason for these losses becomes apparent. The exact amounts of wages and freight rates paid are not shown. This condition was directly responsible for the closing down of many mining operations for an indefinite period, and for the enormous losses suffered in 1921.

Practically every metal-mining state suffered great losses on account of the cessation of mining operations and operations which were conducted at a loss. The number of mining corporations which filed returns from these states and the number which showed deficits are as follows:

| | Total number reporting | Number showing deficits |
|---|---|---|
| Arizona | 288 | 273 |
| Arkansas | 127 | 89 |
| California | 1,368 | 1,028 |
| Colorado | 1,031 | 859 |
| Idaho | 305 | 278 |
| Michigan | 154 | 105 |
| Minnesota | 265 | 185 |
| Missouri | 552 | 416 |
| Montana | 412 | 347 |
| Nevada | 409 | 371 |
| New Mexico | 115 | 100 |
| Oklahoma | 1,030 | 782 |
| Utah | 723 | 653 |
| Washington | 526 | 480 |

The Treasury Department's statistics also show that the coal mining industry suffered from the effect of the depression in 1921. Returns were filed by 3,656 coal-mining corporations. Of this number, 2,577 reported deficits aggregating $72,521,815. The remaining 1,079 paid a total federal tax of $15,219,444, not including the capital stock tax, for which no figures are given.

In summing up the effect of the depression in 1921 upon the nation's business, Edward White, chief of the statiscal division of the Bureau of Internal Revenue, recently told the Monday Lunch Club, of Washington, that "the result of the year's business as shown by the reports from which the figures were tabulated, gives one much for conjecture as to what might have been the extent of demoralization in the economic structure of the country if certain stabilizing conditions had not prevailed."

"The year's losses," said Mr. White, "were provided for out of the large undistributed profits of previous years, and vindicated the good judgment of accumulating surplus during profitable years. And that the country should have passed through a crisis of such magnitude as is indicated by the losses sustained and yet have averted a violent financial panic and general economic disorganization and demoralization is due in no small part to the Federal Reserve system, through which support was extended to the banks and through them to the industrial organization as a whole.

"A price collapse such as that which occurred in 1920 would, a decade earlier, have resulted in a panic of unprecedented proportions and would have brought ruin to a large number of individuals and corporations which, with the improved financial machinery, were able to weather the storm of 1921, and for the first time in its history the country passed through a business crisis without suffering a money panic."

# IMMIGRATION AND THE MINING INDUSTRY

*Changes in Immigration Policy Advised—68th Congress Must Either Extend Present Immigration Law or Enact New Legislation Before June 30, 1924—Mining Industry Favors Selective Policy*

AMERICA is thoroughly analyzing its immigration problem, past, present and future, in a most thorough and systematic way. For the first time in the history of this nation the needs of industry are being subordinated to our national destiny.

Immigration is one of the most important questions that will come before the 68th Congress which convenes December 4. The Per Centum Limit Act of May, 1921, with its subsequent amendments, which regulates the influx of most of the immigration to the United States, will expire by statutory limitation on June 30, 1924. An extension or modification of this act, or the substitution of a new law by Congress, is therefore necessary.

### Mining Congress Resolution

The American Mining Congress, realizing the importance to the mining industry of the question of immigration, presented this subject to its Twenty-sixth Annual Convention held in Milwaukee, September 24 to 29. Mining men there assembled indorsed the following resolution:

WHEREAS, There is insufficient labor available in this country to maintain mining and other essential industries at their necessary scale of operations; and

WHEREAS, The number of immigrants admitted to this country is limited by law; and

WHEREAS, Under the existing conditions such immigrants as are admitted are largely undesirable in that they have no intent to perform any constructive service and in fact do not contribute any useful effort. Therefore, be it

*Resolved*, That we hereby place this organization on record as in favor of selective immigration, operative prior to embarkation or such other procedure, if a better be proposed, as will tend to increase the proportion of workers among aliens admitted to the United States, to the end that mining and other industries may have a better labor supply than is now available or will probably be available unless specific efforts be made to increase the supply of workers from abroad.

Copies of this resolution have been sent broadcast to all members of the organization who were not able to be present at the meeting and the American Mining Congress is therefore in a position to accurately present the views of the mining industry upon this important subject.

***Of the 400,000 immigrants examined between the ages of 21 and 35, 46 percent showed a mental development of 11 years or less. In the State of New York today, of all of the inhabitants of those institutions devoted to caring for mentally incompetents, 46 percent are foreign born, 27 percent are aliens today, and one-third of all the taxes of New York are devoted to maintaining those wrecks of humanity in these various institutions where they are put either voluntarily or involuntarily.***

***E. J. Hennig,***
***Asst. Sec. of Labor.***

### Department of Labor Favors Restriction

The Department of Labor is to sponsor a bill which will be introduced in the 68th Congress and, according to the Secretary of Labor, James J. Davis, the Department will recommend an immigration policy that will embody more severe restrictions than ever before and will prevent all "undesirables" from entering the country. The plan of the Department of Labor favors rigid selection of immigrants in their native countries.

Assistant Secretary of Labor Edward J. Henning very forcefully pointed out in his address to the Twenty-sixth Annual Convention of the American Mining Congress that "the gentle art of unloading is as old as Europe" and the statistics that he presented there bore out the assumption that Europe is industriously practicing this art.

The Department of Labor points out, that in a review recently made by Dr. Sweeney, of the 400,000 immigrants examined between the ages of 21 and 35, 46 percent showed a mental development of 11 years or less. The Department also points out that in the State of New York today of all of the inhabitants of those institutions devoted to caring for mentally incompetents, 46 percent are foreign born, 27 percent are aliens today, and one-third of all the taxes of New York are devoted to maintaining those wrecks of humanity in these various institutions where they are put either voluntarily or involuntarily.

### Recommendations Made

Leaders in industry are unanimous in declaring that some way must be found whereby a desirable class of men can be brought into the United States to supply the country's labor needs. We are not producing or developing the man power to do certain essential work, so that the problem is immediate and not one of the future. Leaders in the mining industry have made a number of recommendations to the American Mining Congress which are presented herewith. The outstanding consensus of the opinion expressed by these recommendations is that the desirability of the immigrant shall be determined at the source rather than at the port of entrance; none of the recommendations desires the bars let down for so-called cheap labor, but rather that some method shall be devised whereby the large percentage of dependents now admitted under the present system can be supplanted by workers who will enter productive employment in the various industries. Recommendations, in part, are:

1. Immigrants should be selected from naturalizable races. Every immigrant should be considered a potential citizen and our immigration policy should be framed with the object of obtaining the greatest number possible of additional good citizens.
2. Selection of immigration with such restriction as will permit only those people to enter our country who are determined to assimilate American principles with a God-fearing respect for law and order and a desire to live under the principles of liberty and justice.
3. Selection of immigrants without limitation if they are proved to be clean able-bodied men, anxious to give a day's work for a day's pay, who are sold on what the Constitution guarantees them and every other citizen of the United States.
4. Admission of the type of immigrant who is willing to work as a laborer as the first step toward some better grade of employment.
5. The selection of immigrants by the Immigration Department to the end that we shall increase the permissible quota from those

countries that send the best class of labor to our shore, men who are trained in some particular department of mining, steel work, or other industries, which makes them fit to step into this country and know something of what they are called upon to do.

6. A selective immigration policy that selects the immigrants prior to embarkation. If, as has been pointed out, we cannot with propriety tell foreign countries who may leave their shores, we can with perfect propriety say who may come to our country before they leave their own. In a selective immigration policy let us first attempt to standardize who would do the selecting. An immigration bill should provide for the proper machinery to select immigrants. Let us not forget the Railroad Administration, the Fuel Administration, and, above all, the Fact Finding Commission which never found a fact,
7. At Winnipeg, Canada, men are walking the streets looking for jobs, while just across the border the mines of America are crying for workmen. These men are good, honest, intelligent workmen who want and need a job. We must find some way whereby this desirable class of men can be brought to the United States to supply our labor needs.
8. Every candidate for admission to this country should be rigidly examined prior to embarkation. A proper examination will conclusively determine not only the physical and moral fitness of the immigrant but also whether or not he is mentally alive to his opportunities in this country.
9. If the nation is justified in limiting the number of immigrants who may enter each year, it is also justified in stipulating that the quota consist chiefly of those classes of which we are most in need. If the examination of aliens in their own countries by agents of this Government is impossible, is it not possible to create a semi-governmental employment service, giving prospective immigrants definite assurance of work on their arrival?
10. The time has come when the future of America as a whole should alone be considered, and the question of economics completely laid aside for the time being, until the United States has recovered from this fit of indigestion caused by the tremendous influx of an alien race of people. Unless we approach the subject from this angle, we will be forced into diplomatic quarrels arising over the most favored nation's clauses in our various treaties and perhaps plunge into more difficulties than we are now experiencing.
11. Objection to the policy of selection at point of embarkation might be met through a knowledge of the objections of the other countries and through the education of steamship companies to the probable loss they would make unless the immigrants are selected according to the standards approved by the authorities of the United States. Also the consuls of the United States should be kept informed of the quota available so that in granting visas to passports they could point out to the applicants the probabilities of their entry being allowed and thus prevent some of the heartburn and loss entailed by refusing suitable immigrants merely because the quota of their nationality is filled.
12. An immigration bill should include some means of a sifting process at the point of embarkation and some provision for the crediting of "departures."

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ELLIS ISLAND FROM THE AIR

It therefore is readily seen that the mining industry favors:

FIRST: Quality and not quantity.

SECOND: The selection of immigrants at the point of embarkation.

THIRD: That certain tests be adopted that the immigrant must pass which will indicate his fitness to assimilate American ideals and his earnest intention to become an American citizen.

Industry generally is taking a consensus of public opinion in regard to this subject. Practically every industry affected by the immigration law is holding conferences with a view to making recommendations to Congress. Important among these conferences is that to be held on December 13 and 14 at the Hotel Astor, New York City, under the auspices of the National Industrial Conference Board. They are attacking the subject from a broad angle, asking all organizations to meet with them for a free discussion of the subject of "a national immigration policy that will safeguard the social life and institutions of the United States, while meeting fairly the normal economic needs of the country." In order that any participants in the conference may not be bound by the discussion, no motion or formal vote on any of the questions presented will be entertained. They have divided the subject into six major topics which include:

***I. Shall the Per Centum Limit Act which expires by limitation on June 30, 1924, be retained by extending the period of its operation?***

***II. Shall the Per Centum Limit Act be retained with amendments in respect to administrative features, among those suggested being:***

a. Shall control over quotas for the various nationality groups be vested in American consular officers or governmental agents in foreign countries, operating under instructions from the Federal Government and working in close cooperation with immigrants and steamship companies to prevent as far as possible the arrival of aliens in excess of quotas?
b. Shall the maximum monthly quota for each nationality be fixed so as not to exceed 10 percent (instead of the present 20 percent) of the annual quota?
c. Shall the unused portion of any monthly quota be admissible in any succeeding month during the fiscal year?
d. Shall the wife and minor children arriving with an admissible alien

or subsequently joining him in the United States be admitted, if otherwise admissible, without being charged to a quota?

e. Shall an alien arriving after his nationality quota for the month has been exhausted and who is refused entry only because of exhaustion of such quota be admissible under a new monthly quota without being returned to the country of embarkation?
f. Shall resident aliens leaving the United States for a temporary visit abroad be admissible on their return without being charged to quotas, if such return occurs within a year?
g. Shall "aliens who are professional actors, artists, lecturers, singers, nurses, ministers of any religious denomination, professors for colleges or seminaries, aliens belonging to any recognized learned profession, or aliens employed as domestic servants" or the wife and minor children of any such alien arriving with him or subsequently joining him, be admitted, if otherwise admissible, without being charged to quotas?
h. Shall any other administrative modifications be made and, if so, what modifications?

***III. Shall the Per Centum Limit Act be retained with amendments in respect to percentage restriction, among those suggested being:***

a. Shall the percentage be changed?
b. Shall the census year on which the percentage is based be changed?
c. Shall the percentage be made to depend on the number of aliens of each nationality group resident in the United States or on the total population in the United States?
d. Shall quotas be based on net immigration?

***IV. Shall the Per Centum Limit Act be superseded by new legislation and, if so, by what kind?***

***V. Shall special legislation be enacted to assure better selection, distribution and assimilation of alien immigrants? Principal suggestions are:***

a. Shall the Canadian system of selective immigration be given a trial in the United States?
b. Shall the contract labor law be modified and, if so, in what respects?
c. Shall the illiteracy law be modified and, if so, in what respects?
d. Shall physical examination of aliens desiring to emigrate to the United States be held at major ports of embarkation abroad by United States medical officers?
e. Shall certain blood and intelligence tests proposed by the United States Secretary of Labor be applied to alien immigrants?
f. Shall a system of registration of alien immigrants be put into effect and, if so, what form shall it take?
g. Shall a limited educational test in respect to ability to speak and write English and understand American institutions be required of every alien immigrant within a given time after the time of his entry into the United States?
h. Shall alien immigrants be prohibited from settling in cities of a specified size for a limited period?

***VI. Shall an Investigatory Commission be appointed by the President under Congressional Resolution to inquire into, and report within a limited time concerning:***

a. Immigration and emigration in the light of present domestic and world conditions;
b. Needs of normally functioning industry, commerce and transportation for immigrants generally, and for special groups of immigrants;
c. Economic and social assimilability of foreign racial groups;
d. Effect of mixture of races upon the virility and social progress of the nation;
e. Practical methods of selecting, distributing and assimilating immigrants;
f. Suggestions for an adequate, scientific and practical program of immigration based on an analysis of the aims and ideals of our national life;
g. Other major factors in the immigration problem?

## CALIFORNIA CHAPTER MEETS

The annual meeting of the California Metal and Mineral Producers' Association and California Chapter of the American Mining Congress was held in San Francisco on October 24.

Elmer E. Paxton, general manager, Engels Copper Mining Company, Plumas County, California, was elected president of the organization. J. A. Fulton, manager, Melones Mining Company, Melones, Calif., was elected first vice-president; P. C. Knapp, secretary, Natomas Company of California, San Francisco, second vice-president; E. C. Hutchinson, president, Kennedy Mining and Milling Company, San Francisco, third vice-president; and Robert I. Kerr, secretary and treasurer.

Edwin Higgins, J. A. Fulton and Elmer E. Paxton were elected members of the board of directors, to serve for a period of three years.

## ANNUAL MEETING ARIZONA CHAPTER, AMERICAN MINING CONGRESS

The Arizona Chapter of the American Mining Congress will hold its annual meeting at Phoenix, Ariz., on December 3. At this time new officers will be elected, and it is anticipated that the chapter will open permanent headquarters in Phoenix, beginning with the new year.

Arizona mines have reduced wages and salaries approximately 10 percent, effective November 1.

G. M. Colvocoresses is governor of the chapter.

## ADVISORY COMMITTEE ON NON-FERROUS ALLOYS MEETS

The Bureau of Mines Advisory Committee on Non-Ferrous Alloys, consisting of representatives of the Institute of Metals, The American Society for Testing Materials, The American Institute of Mining Engineers, The American Society of Mechanical Engineers, and The American Electrochemical Society, met with Bureau of Mines and Bureau of Standards officials at Washington, November 15, to discuss the work and problems of the two bureaus relating to non-ferrous alloys. This advisory committee meets annually or semi-annually to review the bureaus' work and discuss future possibilities.

Bureau of Mines officials led the discussion on the following subjects:

Silver Alloys, Dr. H. Foster Bain, director, Bureau of Mines.

Effect of Inclusions and Imhomogeneities in Alloys, Especially in Regard to Endurance, Dr. H. W. Gillett, chief alloy chemist.

Analysis of Aluminum and Aluminum Alloys, Mr. R. J. Anderson, metallurgist.

Reclamation of Mixed Bronze and Babbitt Borings, Dr. Gillett.

Oxygenated Air in Non-Ferrous Metallurgy, Mr. Davis.

Metals for Non-Corrosive Survey Markers. Mr. Andrew Stewart, chemist.

Metallic Refractories for Electric Brass Furnaces, Dr. Gillett.

Heat Treatment of Cast Non-Ferrous Alloys, Mr. Anderson.

Sands for Molds and Cores in Aluminum Foundry Practice, Mr. Anderson.

Corrosion of Metals and Alloys, Mr. Anderson.

Availability of Rare Metals for Experimental Work—Beryllium, Dr. Lind, chief chemist.

D. A. Lyon, assistant director of the Bureau of Mines, presided.

## TARIFF INQUIRY

F. M. Leonard, formerly of the Cerro de Pasco Copper Co., is in charge of the mineral work of the Tariff Commission, succeeding Paul M. Tyler. The commission has completed the domestic investigation of pig iron and plans a foreign investigation of this product. The commission has made a survey of the domestic magnesium situation, covering costs, and will extend it to include the situation abroad. Mr. Leonard has completed investigation of magnesite fields in California, Washington and other parts of the west. The commission has not yet concluded an investigation of foreign costs of magnesite.

# PERIL OF DEADLY GAS MINIMIZED

THE United States Bureau of Mines, after a complete study of the subject, has issued a statement declaring that miners trapped in underground excavations during mine fires or after explosions may frequently save themselves from the peril of deadly gases by the erection of barricades of cloth, board, coal or rock. The Bureau of Mines has a record of the saving of 275 lives in coal mines through the erection of barricades, and is confident that hundreds of other lives might have been saved if entombed miners had possessed a thorough knowledge of barricade construction.

After many mine explosions in America and in foreign countries examination has shown that many of the men found dead had escaped the violence and flame of the explosion but had succumbed to the gases, called afterdamp, left by the explosion. The evidence collected shows that at 140 disasters 1,477 persons were killed outright and 1,391 were overcome by afterdamp. Sometimes miners have traveled long distances from their working places before meeting deadly gases; and groups of men have been found dead in a remote section to which they had retreated to escape the afterdamp. Again, men have been found dead near a pile of brattice material which they did not use because they did not know that a barricade would be of value. After the Reilly mine explosion in Pennsylvania in 1922 several of the men rescued said that they knew nothing about the erection of barricades, and there must be many miners unaware of this method of escaping death.

The following practical recommendations for the guidance of miners entrapped at mine disasters are made by the Bureau of Mines:

When entrapped by gases from fires or explosions, and forced back into workings in which there is comparatively good air, keep uppermost the thought of building a bulkhead or stopping, and collect tools, timber, canvas, water, dinner buckets, hay from the stable, and anything else that might be useful.

If possible, a barricade should be near a valve in the compressed-air pipe line, if air is used. The valve should be opened to furnish additional air. If there is no compressed air, the next best thing for miners behind a barricade to do is either to lie down or sit on the floor in the hope that the rescue crew will find them before they are overcome. In this relaxed position they will breathe much less air than if they exert themselves.

As soon as a place is chosen for a barricade, its erection should begin, for the gases often travel quickly. The ventilation should be shut off as soon as possible by the opening of doors and the hanging of brattice cloth or by the moving of a door to a new place across an entry. The permanent barricade should be started 50 to 75 feet from the brattice cloth. Always barricade off as much of an entry, room, drift or crosscut as possible, so as to provide a maximum quantity of air. Before constructing a bulkhead make sure that there is no man-way or other connection with other workings through which gases could come. At some place outside of the first stopping, if more than one stopping is built, place a sign of some kind to show that men are behind it.

If a barricade be made of lumps of coal, slate or other rock, or ore, build two walls 2 to 3 feet apart and fill the space between with fine material or mud. The stopping must be air-tight. Board stoppings are not as easily made gas-tight as those built of dirt or rock and dirt. All chinks and holes in the barricade should be stopped with clay, rags, clothes and similar material.

Coal miners should remember that they should not barricade themselves in any working or other place that gives off gas (methane), for fire damp may accumulate and be ignited in some way, causing the death of the whole party.

If a piece of pipe is available, it should be placed through the stopping and plugged at the inner end, in order that tests of the air outside the barricade can be made by removing the plug.

After the barricade has been built, in order to conserve the oxygen of the air, the men should keep as quiet as possible. However, occasionally somebody should walk around so as to mix the air. All the men should not congregate in one place.

When the bulkhead is erected test it for leaks by means of a candle or carbide lamp. The way in which the flame of a lamp or candle burns will show the condition of the confined air and how the oxygen is being used up. All flame lamps should be extinguished, in order not to consume any more oxygen than necessary; also it is desirable not to use oil, carbide and electric batteries needlessly.

Men barricaded in a metal mine should signal frequently by pounding on the air pipe and on the back of the rock drift; or, in a coal mine, by pounding on the rib or the roof. If, during their retreat from gases, miners find any chalk they should carry a piece with them. Directions for a relief party may be written on doors, or an arrow may be drawn to indicate the course the miners took in retreating. The flame of a carbide lamp makes good letters on timber or rock.

The first barricade recorded in the reports of the Bureau of Mines was built by entombed miners during the fire at the Cherry mine in Illinois, in 1909. Seven days after the outbreak of fire in this mine a rescue crew met a party of 8 men who had barricaded themselves with 12 others, saved later, but had broken through and were making toward the shaft. They had walked over half a mile, past cars and dead mules, in the dark, and in an atmosphere (afterdamp) that would not support a flame light. These men were in comparatively good condition when found, and they recovered completely.

By bratticing themselves in an emergency shelter, by closing the "creephole" or sliding door in a stopping above a compressed-air pump, and then breathing the exhaust from the pump, 13 men saved their lives in the No. 2 mine of the San Bois Coal Company at McCurtain, Okla., in March, 1912.

At the time of the explosion in No. 5 mine of the New River Collieries Company at Eccles, W. Va., 74 men were in No. 6 mine above it; of these 8 were overcome by afterdamp, 31 were rescued and 35 saved themselves by retreating from the hot afterdamp to a sump room, where they bratticed themselves off by means of canvas. Here they remained for four hours until a messenger came down the shaft from the surface, after which they were hoisted to the top.

There were 153 men in No. 7 mine of the West Kentucky Coal Company, at Clay, Ky., when an explosion on August 4, 1917, killed 62 miners; 43 of the others saved their lives by bratticing off an area not affected by the explosion where they were rescued three and a half hours later.

On March 2, 1915, an explosion at No. 3 mine of the New River and Pocahontas Consolidated Coal Corporation, at Layland, W. Va., killed 115 of the 169 men in the mine. Of the 54 that escaped, 47 saved their lives by erecting bulkheads at two different points.

Detailed information regarding the erection of barricades during mine fires or after explosions is given in Miners' Circular 25, by J. W. Paul, B. O. Pickard and M. W. von Bernewitz, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

## THE 68th CONGRESS

"WELL, what is Congress going to do?" That is the question which everyone hears and everyone asks in Washington today.

The incoming Congress is not only a new Congress, but one of the newest congresses we have ever had. In the House there will be 141 representatives who were not members of the last Congress. Of them, 115 are new members who have never before served in Congress. Twenty-six have served in some previous Congress, but not in the last one. There are also 21 new members of the Senate. Several of these new senators have served as representatives in the House, hence they are thoroughly familiar with national legislative problems. Among those who are new to the Senate there are many whose political thought is new to the nation. So the query concerning what the incoming Congress will do is a most natural one and a most difficult one to answer.

In the last year the complexion of Congress has probably changed more rapidly than at any time before in the history of the country, except, of course, at the time of a presidential election. In the 67th Congress there were in the House 299 Republicans, 131 Democrats, and 1 Socialist, giving a Republican majority of 167 votes, a majority larger than the entire opposition vote. The senatorial membership of the same Congress was made up of 59 Republicans, 36 Democrats, and 1 Progressive Republican, giving a Republican majority of 22. In the 68th Congress there will be in the House 225 Republicans, 205 Democrats, 1 Independent, 1 Farmer-Labor, and 1 Socialist, giving a Republican majority of 17. In the House there are 2 vacancies, caused by death and resignation. These are in two districts, the 7th Kentucky and 3d Mississippi, which have, almost without exception, returned Democratic representatives heretofore. It is to be assumed, therefore, that in the present state of national politics Democratic representatives will be returned to fill these vacancies. Such election would reduce the Republican majority to 15. The Senate of the incoming Congress will be made up of 50 Republicans, 43 Democrats, 1 Progressive Republican, and 2 members of the Farmer-Labor party, leaving a Republican majority of 4. This Republican majority numbers in its membership at least 4 senators who were elected on Republican tickets but who are not noted for adherence to party lines.

With the elevation of Vice-President Coolidge to the Presidency it will be necessary to elect a president for the Senate from among the body of duly elected senators. It is, of course, to be assumed that this new president of the Senate will be elected from the Republican party. It is expected that Senator Cummins, of Iowa, will serve both as president of the Senate and as chairman of the Interstate Commerce Committee. The Republican majority in the Senate is, on occasion, reduced by one by the election of one of its number to serve as president of the Senate in lieu of the Vice-President. The Vice-President in his capacity as president of the Senate had the privilege of voting in case of a tie, although he had no other voting privilege. The president of the Senate, elected from its membership, will retain his voting privilege as a senator, but naturally cannot have a second vote as president of the Senate in case of a tie.

A member of Congress who has served for many years and has been a member of both houses stated that in his somewhat mature opinion this will be a session of many proposals and few acceptances; that there will be much legislation introduced along novel and untried economic lines and that the wide division of thought and interests would prevent any considerable amount of concrete accomplishment.

## ANALYSIS OF LEGISLATIVE SITUATION IN THE 68th CONGRESS AS COMPARED WITH THE 67th CONGRESS

67th CONGRESS

THE SENATE

| Republican | Democrat | Progressive Republican | Republican Majority |
|---|---|---|---|
| 59 | 36 | 1 | 22 |

THE HOUSE

| Republican | Democrat | Socialist | Republican Majority |
|---|---|---|---|
| 299 | 131 | 1 | 167 |

68th CONGRESS

THE SENATE

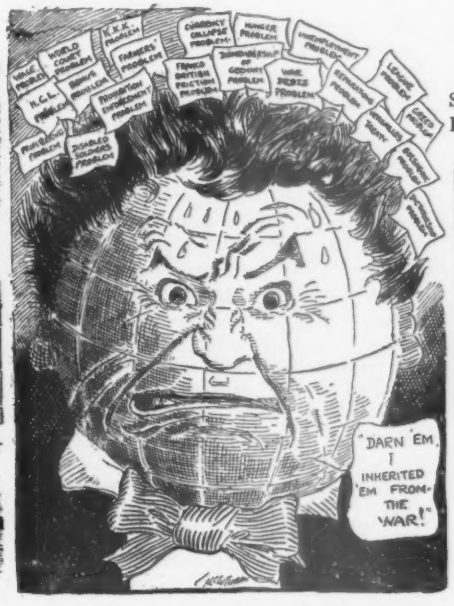
| Republican | Democrat | Progressive Republican | Farm Labor | Vacant | Republican Majority |
|---|---|---|---|---|---|
| 50 | 43 | 1 | 2 | | 4 |

THE HOUSE

| Republican | Democrat | Independent | Socialist | Farm Labor | Vacant | Republican Majority |
|---|---|---|---|---|---|---|
| 225 | 205 | 1 | 1 | 1 | 2 | 17 |

SH-H-H'

*Dayton News.*




*Copyright, Chicago Tribune.*

SHE CERTAINLY DISCRIMINATES BETWEEN HER TWO DAUGHTERS

*Washington Star.*

It is apparent that the balance of power will lie in every close issue with those representatives and senators whose political viewpoint does not align itself with either party and whose judgment of the legislative policies which should guide the nation is as yet untried.

The group whose members term themselves "Progressives" is much more clearly defined and organized in the Senate than in the House. This group in the Senate will vary from eight to twelve in number, depending on the number who are in accord on the particular issue in question. It includes both newly-elected Senators and those who have been in the Senate for years and is drawn largely from the Republican party. In the House it is difficult to estimate the number or the solidarity of the group because it will be made up largely of newly-elected Representatives. It is certain that this group, as in the Senate, will be larger than the Republican majority. It is going to be an interesting Congress.

# THE NEW YORK SILVER MEETING

## *Silver Producers in Three-Day Session—Difficulties Carefully Considered—Plans Submitted for Meeting Situation*

A THREE-DAY session of the committee appointed by Mr. W. Mont Ferry, of Salt Lake City, chairman of the Reno Silver Conference, was held at the Waldorf-Astoria Hotel, in New York, on November 14, 15 and 16, and a later conference with the Secretary of the Interior, Herbert C. Hoover, took place in Washington, November 19.

Those in attendance at the meeting were: Mr. Ferry, chairman of the Reno Conference and of the committee; Mr. Charles Bocking, of Montana; Mr. Fred Carroll, of Colorado; Mr. John Hays Hammond, of Washington; Mr. Alfred Harrell, of California; Mr. W. A. Mitchell, in place of Mr. J. G. Kirchen, of Nevada; Mr. E. J. Raddatz, of Utah; Mr. Robert E. Tally, of Arizona; Mr. C. F. Kelley, of New York; Mr. F. H. Brownell, of New York; Mr. F. Y. Robertson, of New York; and Dr. C. A. Holder, of the Asia Banking Corporation of New York.

The whole committee was represented with the exception of Mr. Stanley A. Easton, of Idaho, who wired his inability to be present but pledged his entire cooperation to the findings of the committee.

In addition to the general discussions by members of the committee, addresses were heard from Senators Tasker L. Oddie and Thomas J. Walsh, members of the Senate Committee on Gold and Silver Inquiry; Mr. H. N. Lawrie, assistant to the Commission; J. F. Callbreath, of the American Mining Congress; Mr. Handy, Mr. Harmon and Mr. Neumeyer, of the firm of Handy and Harmon, silver merchants; Mr. C. W. Harmon, president of the Sterling Silver Manufacturers' Association, and others.

Efforts were made to investigate every possible avenue through which silver reaches its final market. All of the difficulties of the present situation were carefully considered; a very optimistic spirit of cooperation prevailed and a complete determination on the part of each one present was manifest to do everything in his power looking to increased uses and the orderly marketing of silver.

As a sidelight to the discussion and the only part available for publication, we append the communication from the Secretary of the American Mining Congress for such consideration as its merits may justify.

***We are not applying to the sale of silver the same energy and skill which is being applied in the sale of manufactured goods. In other words, silver is being bought not sold. By this process we gain less than our share of the world's market.***

November 12, 1923.

To the Members of the Silver Committee
appointed by the Reno Conference,

Mr. C. F. Kelley, Chairman,
Waldorf-Astoria Hotel,
New York, N. Y.

Gentlemen:

Will you permit me to suggest for your consideration two plans which may or may not be practical, but in view of the fact that in a general way these plans have been successfully used by other industries you may find them worthy of consideration.

The problem of how to increase the uses of silver and thus through the operation of the law of supply and demand to increase its value to the producer, is the one great problem which confronts your committee.

Efforts to increase the use of silver for industrial purposes will be helpful, but no increase which can be secured in such use will absorb more than a small part of the surplus. More important will be a consideration of two questions.

First and most important will be the means by which foreign countries now devoid of metallic currency for business transactions may be induced to use silver for coinage purposes, both for the direct benefit which will accrue by increasing the demand for silver and also for the indirect benefits which would come to our general industrial structure by reason of more stable conditions and the opening of new markets in those countries now unable to buy our goods.

The second problem will be the securing of a better price for silver used for industrial purposes in a market in which the supply is largely in excess of the public demand.

Considering the first of these problems, we might well consider the history of our own coinage system just following the Revolutionary War and the adoption of our Constitution.

Our country, at that time without any coinage system of its own, was doing business with the coinage of other countries, mostly the coinage of England, Spain, France and Portugal, the Spanish milled dollar being the unit of common acceptance. Alexander Hamilton, while expressing his preference for gold as a unit of measure, was instrumental in establishing the bi-metallic standard, one of his chief reasons being that our trade was largely with the West Indies and South America, countries well supplied with silver.

It seems quite probable that the remaining Central European countries will follow the lead of those few countries which have undertaken to balance their budget and stabilize their currencies, and adopt the gold standard. It seems equally certain that sufficient gold will not be available to support a currency medium of sufficient volume to meet the requirements of business.

It seems equally certain that some generations must pass before the people of those countries will give confidence to paper money, and it therefore seems probable silver will be peculiarly acceptable not only because of its intrinsic value but also because the psychology of ages has developed a complete confidence in the use of silver as money.

The effort of France and some others of these countries now satisfying the demand for metallic money by the use of bronze and other low-priced metals can be but a subterfuge to meet a temporary emergency. In the end no coins which cannot be accepted in the settlement of foreign balances can maintain a domestic trading value. It is fair to assume that as and when these countries shall move toward normalcy and stabilized currency that silver will be most acceptable and will be used if it is made available.

Aside from the sale of Government bonds, which is practically impossible, there are but two means by which these countries can supply themselves with silver.

First, by purchase to be paid for in gold, which is an impossibility, and

Second, by the exchange of goods.

In the investigation of this particular part of our problem we are lead to the one conclusion that unless we can either directly or indirectly exchange our silver for those commodities which these countries have to export, that there is nothing to do but wait until through more devious and difficult channels these countries are able to stabilize their own affairs.

Our own markets are now absorbing

large quantities, more than three billion dollars' worth annually, of foreign goods. Exports are considerably in excess of our imports as to general merchandise, although we are importing more silver than we are exporting. We are not applying to the sale of silver the same energy and skill which is being applied to the sale of manufactured goods. In other words, in the main silver had been bought while our manufactured goods have been sold. By the one process we gain less than our share of the world's market and by the other process it is evident that we are securing our full share of the world's market.

It seems high time, therefore, that the producers of silver shall organize themselves to present a more or less solid front and to employ, create and develop similar selling agencies with ability to push silver out and bring goods back rather than to push marketable manufactured goods out and bring back silver upon our markets.

Your committee was instructed by the Reno Conference to take steps leading to the organization of a Silver Export Association under the provisions of the Webb-Pomerene Act and "under such amendments to such acts as may be had." The last phrase indicates a doubt as to the ability of such an Export Association under the present law to so function as to accomplish real benefits to the silver industry, a doubt which is quite prevalent among those who have studied the question.

To wait until amendments to the Webb-Pomerene Act may be enacted by Congress would be to postpone beneficial action for a discouragingly long time.

### Plan No. 1—A Trading Export Association

I can see no objection to any organization which shall undertake to find a market for our surplus silver in a merchandizing way, taking in exchange therefor such foreign manufactured goods as will find a ready sale in our own markets at prices which would cover the cost of operation and net a satisfactory price for the silver so exchanged.

The exact form of such an organization is a matter which should be worked out with care and under proper legal advice, to the end that its effectiveness as a business organization and its ability to transact business in any country might not be hampered by a lack of proper authority and in conformance with every law.

Such an organization might well associate itself with or utilize purchasing agencies abroad and selling agencies at home in case such could be found able to meet its requirements. The extent and effectiveness of its work would, of course, be largely measured by the number of members and the amount of silver represented; in other words, by the amount of business which the organization undertakes to perform.

It might be wise in the early stages of its operation for this organization to purchase such goods as it could market in foreign countries, paying therefor in silver of American coinage. There is a general belief that the silver coins of this country would find ready acceptance in any of the foreign countries in which an effort is likely to be made looking to the increased use of silver in their currency systems and in which goods are available for export which our markets could consume.

*It is high time that the producers of silver shall organize themselves so as to present a united front and employ, create and develop selling agencies with ability to push silver out and bring goods back rather than to push marketable goods out and bring silver back upon our own markets.*

It might be wise as a next step to propose to the manufacturers in these countries whose goods are available for export and which can be disposed of here at a profit, to point out to them that the dollars which we are offering are composed of 60 cents in silver and 40 cents in Government fiat; that our purpose would be served equally as well by furnishing them the silver at market prices, they to arrange with their government for its coinage. The working of this plan is well outlined in a letter from a prominent silver producer to the writer after a discussion of this general question. I quote from his letter:

"The German Government would coin 5,000,000 ounces of silver in German marks of the old standard, fineness and value, taking this silver, for instance, on a basis of 75 cents per ounce, and turning back to the Trading Export Association the face value in marks of the 5,000,000 ounces at 75 cents per ounce; that these silver marks should be used solely in the purchase of goods, and the payment of workmen and for such merchandise, textiles, and otherwise as could be exported to other countries and sold at the gold value of the face value of the silver marks. This would introduce into Germany for interior use approximately 20,000,000 German silver marks at the old time fineness and value."

Whether it would be wiser, as this letter suggests, for your association to negotiate directly with the foreign government for the coinage of silver or whether it would be better to work through nationals of that government is one of the details which will naturally be decided by the circumstances.

From present information there is little doubt but that these governments would welcome an opportunity to coin silver thus offered, turning back to the owner 75/129ths of this silver in coin with the government's stamp and retaining 54/129ths for governmental uses. There is little doubt that manufacturers in these countries now trying to do business with paper money would gladly welcome a chance to dispose of their goods for silver coin at its face value; there is little doubt but that goods can be so purchased which will be quickly convertible into gold or its equivalent in this or in other countries, and there is little doubt but that this plan will not only open up an increased market for silver but would pave the way to a general use of silver in these countries without which there can be no solution of the silver problem.

The writer offers this plan as a suggestion and perhaps as a basis of discussion with full assurance that the more practical judgment of the members of this committee will quickly measure its defect and that its merit, if any shall be found, will be adapted in any larger plan which may be found feasible.

### Plan No. 2—A Silver Export Association

This proposal contemplates the control of the greater part of the silver produced on the Western Hemisphere, by a foreign selling agency so equipped as to effectively cooperate with all present silver handling agencies, and to make effectual the principles involved in the Webb-Pomerene act which will avoid any competition between such silver producers as between themselves in foreign markets. Already several other lines of production are so controlled to the great advantage of these industries and to the great advantage of the public. It may be said of some of these industries that because of centralized production they are more nearly natural monopolies, but this is only a matter of relativity and it would seem that the Western Hemisphere, if its producers will agree, may as well claim for itself the benefits of control as relating to its silver.

It is well known that the world's production of diamonds is held in strict control by an agency with its headquarters in London and that prices are maintained upon a regular basis and with practical equality throughout the world. The phosphates of Germany, nitrates of Peru, bismuth, borax, iodine

and many other industries are handled in a similar way.

My suggestion is that a foreign silver handling agency shall be created by as many of the silver producers of the Western Hemisphere as can be induced to join, each taking shares or stock therein in proportion to his production, this agency to purchase from its members their silver output when ready for the market, paying them for it by short time notes secured by the warehouse receipts, the silver in the meantime being in the warehouse most convenient to the producer and at all times subject to his control until payment of the notes given therefor has been received. The producer should be able to discount these notes supported by the warehouse receipts as collateral whenever he found it necessary to do so in order to meet his business obligations. The selling agency having the sixty or ninety days' time given by the note in which to sell the silver would not be forced to accept unsatisfactory quotations and would be in a position to force up the price of silver to a point which would cover present costs of production. This agency should naturally seek to increase the use of silver and could equip itself so as to exert a powerful influence, not only in the stimulating of the use of silver for industrial purposes but in securing an increased use of silver in the currency systems of the world. The benefit of such effort would be world-wide in that stabilization of the monetary systems of the various semi-bankrupt nations in one of the essential steps to their recovery is vastly important to each of these nations and indirectly would result in unmeasured indirect benefits to the commerce of the world.

It may be that the other proposal submitted suggesting an export and trading corporation might well be made a part of this general plan, by bringing to our silver producers the benefit of expert salesmanship in disposing of their commodity in addition to the advantage of being able to wait until the market demands justified the sale.

It is also quite probable that in financing this movement the War Finance Corporation could be induced to assist in such a way as to add to the stabilizing influence of the movement.

Whether such an organization should be created in Switzerland, which is now the financial clearing house in the central European countries, or whether in London, now the headquarters of similar agencies, or elsewhere, would be determined by the liberty of action which would be secured under the laws of the country in which the organization was perfected.

I am quite convinced that a combination of the two plans proposed, if general approval of the silver producers could be secured, would work out a practical solution of the silver problem, which I regard as one of the most important of the many problems which the world has now under consideration and this entirely apart from the interest of the silver producer.

The American Mining Congress offers its services to your committee in any way in which its services can be utilized and hopes these suggestions will be received by your committee as a manifestation of its desire to be helpful in any possible way.

Very respectfully yours,

J. F. CALLBREATH,
*Secretary.*

## COPPER AND BRASS RESEARCH ASSOCIATION ELECTS OFFICERS

At the third annual meeting of the Copper and Brass Research Association, held November 15 at the Association's offices, 25 Broadway, New York, the following were elected directors for the ensuing year, the first eight mentioned comprising the executive committee:

R. L. Agassiz, president, Calumet & Hecla Consolidated Copper Co.; Edward H. Binns, president, C. G. Hussey & Co.; Stephen Birch, president, Kennecott Copper Corporation; F. S. Chase, president, Chase Metal Works; Walter Douglas, president, Phelps Dodge Corporation; Charles Hayden, vice-president, Chino, Nevada Consolidated, Ray Consolidated, and Utah Copper Companies; C. F. Kelley, president, Anaconda Copper Mining Co.; H. J. Rowland, secretary and sales manager, Rome Brass and Copper Company.

J. W. Allen, treasurer, Greene Cananea, and Inspiration Consolidated Copper Companies; Henry F. Bassett, president, Taunton-New Bedford Copper Co.; H. C. Bellinger, vice-president, Chile Exploration Co.; J. Parke Channing, vice-president, Miami Copper Co.; Joseph Clendenin, Braden Copper Co.; Carl F. Dietz, president, Bridgeport Brass Company.

B. Goldsmith, president, The National Brass & Copper Co.; E. O. Goss, president, Scovil Manufacturing Co.; Robert H. Gross, president, The East Butte Copper Mining Co.; U. T. Hungerford, president, U. T. Hungerford Brass and Copper Co.; C. V. Jenkins, treasurer, Chino and Utah Copper Companies, secretary-treasurer, Nevada Consolidated Copper Company, assistant treasurer, Ray Consolidated Copper Co.; Wm. Loeb, vice-president, American Smelting and Refining Co.; H. B. Paull, auditor, Calumet & Arizona Mining and New Cornelia Copper Companies; Dr. R. M. Raymond, United Verde Extension Mining Co.; A. B. Seelig, manager, Michigan Copper & Brass Co.; W. Parsons Todd, manager of sales, Copper Range Company.

After the annual meeting, the directors elected the following officers:

President, R. L. Agassiz; vice-presidents, C. F. Kelley, F. S. Chase, Walter Douglas, H. J. Rowland, and U. T. Hungerford; treasurer, Stephen Birch; secretary, George A. Sloan; manager, William A. Willis.

In commenting upon the work of the Association, which is an unincorporated, voluntary organization composed of the principal brass and copper companies, R. L. Agassiz, president of the Association, said:

"The program for 1924, as approved by the members at today's meeting, provides for an extension of the Association's activities, in line with our plans to develop new and increased outlets for brass and copper. We feel that the Association is serving satisfactorily the purposes for which it was created and that much progress has already been made.

"Copper consumption in this country for the first three-quarters of 1923 (and this includes brass, in which form is consumed about one-half of all the copper used in this country) was greater than consumption for the entire year of 1922. The outlook for 1924 is favorable by virtue of the prospect of continued activity in the three largest brass and copper-consuming industries, i.e., electrical, automotive and building construction.

"The use of electricity on a constantly growing scale is inevitable. Automobile manufacturers predict an increased production over 1923, while the building industry is expected to continue its present rate of activity.

"Copper consumption in the United States at the present time is about 70 percent of the world's production. Our survey of channels of consumption indicates that the ultimate or potential demand for copper and brass in this country has by no means been reached."

The following are now members of the Copper and Brass Research Association:

American Smelting & Refining Co., Anaconda Copper Mining Company, Arizona Commercial Mining Co., Braden Copper Co., Bridgeport Brass Co., Calumet & Arizona Mining Co., Calumet & Hecla Consolidated Copper Co., Chile Exploration Co., Chino Copper Co., Chase Metal Works, Copper Range Co., T. E. Conklin Brass & Copper Co., Dallas Brass & Copper Co., Engels Copper Co.

# THE GROWING IMPASSE IN COAL

## *Wages, Subjected to Collective Bargaining to Put a Foundation Under the Competitive Struggle, are Strangling the Industry—The Delayed Liquidation and Its Danger*

By GEORGE H. CUSHING

FOR years thoughtful men in the coal industry have sought some common base from which they could start their competitive struggle. The theory was that, morally, it was wrong to throw everything involved in mining coal into a pot and put all of this into the hands of the salesman to protect or to give away in the price he named for the coal.

Broadly speaking, one man's coal in the ground; a second man's labor; a third man's machinery; a fourth man's hole in the ground; a fifth man's working capital; a sixth man's managerial ability; and a seventh man's selling ability were all pooled and offered for sale at one price—the market price of a ton of coal. At times—such as those at present—the selling price of the coal destroyed all of these values. That is, each one of the seven contributed his share to the production of the coal. Yet six of them got nothing for their participation; the price of the coal was so low that values were wiped out.

Because of these wholesale destructions of equities, the operators have tried to find a safe way of exempting some of them from the devastation of competition. Thus, some years ago, a shrewd operator suggested that it should be possible to fix an in-the-ground value of the coal itself and, by adhering to that invariably, find a bottom beyond which price competition might not go. To a certain extent, that has been done by the royalty system on leased land and by sinking fund provisions in bond-secured mortgages. That, however, does not go very far.

The big effort has been made in connection with labor. The union has said: "You may compete with your own property as much as you please, but you cannot compete with our labor. And as for competition, we of the union will refuse to compete not only among ourselves but with those groups which are not unionized. Our labor is for sale at one price; it cannot be sold for less than that price."

This has meant that for twenty years the operators in the union field have had one point below which their wages could not sink—the union price of labor. It was the theory of the union that if wages were thus fixed on an arbitrary basis, the much discussed minimum price for coal would be found. It was believed that the actual monopoly-fixed wage rate would be the irreducible minimum price of coal.

G. O. P. Horner, caught in a corner,
Holding the anthracite pie,
Stuck in his trunk and pulled out a chunk,
And raised it a little too high.

*Brooklyn Eagle.*

If the union had been willing to bargain as to the labor cost of a ton of coal—if it had been willing to contract to produce each ton at a stipulated labor cost—the effect would have been as indicated. Instead, the union was willing to bind only a fifth or a third of the men to the tonnage basis. Then it adopted the policy of adding compensation men without stint and of piling on social charges to improve the living conditions. The result was a constantly increasing and uneven cost of production. The result was something which the operator could not measure until after all bills were paid, which also was after the coal had been sold and the price accepted. The miners' union has said that the true purpose of collective bargaining was to fix a starting point for the competitive struggle. In effect, it has been nothing of the sort.

Another thing has interfered with the working out of this scheme. The customers of the coal mines include the railways—now under monopoly control; the public utilities—monopolies closely bound together to express an unit idea; the factories which are not monopolized but the purchase prices of which are predetermined by the price charged to railways and public utilities; and the householders, who are widely scattered and unorganized. The old practice was to accept cost or less on the steam coal and to recover the loss and make the profit off the household coal. That scheme is no longer applicable for two reasons, viz:

First, the steam coal—in the bituminous field—is now grown to such volume that no loss on it can possibly be made up on any possible price on the house coal.

Second, the household users are finding certain substitutes available and are buying them regardless of cost.

It is interesting to note in this connection that this year one very large producer accepted a loss of 75 cents a ton on his steam coal and sold his house coal at a profit of $2 per ton. But the volume of steam coal was so large and that of the house coal relatively so small that the mine run realization was actually below the cost of production.

It is, further, interesting to know that rather than pay $16 per ton for anthracite—and relative prices for bituminous—many householders are turning to oil. Their oil fuel alone, at 8 cents per gallon, is equal to anthracite at $16 per ton. In addition, the cost of their equipment averages close to $750, or 75 cents per ton of coal for 10 years. Also, each 1 cent increase per gallon in the price of oil equals a raise of $2 per ton in the price of coal. It would seem that these charges would prove prohibitive. The fact that they are not is warning to the industry that the price policy must be changed—that steam coal must bear its share of the profit.

In face of these conditions which must spell disaster to the industry, we come back to the labor cost—the irreducible minimum below which prices may not sink. It is known that the wages of miners are fixed in two ways and according to two theories. In 31 out of 35 bituminous districts the wages are fixed by a labor monopoly. In the other four districts the miners are non-union and their wages are still competitive—not only with other labor but with the cost of producing oil.

Part of the non-union labor—to meet the oil competition—has just accepted a wage reduction of 20 percent. (Part of this was due to an increase in freight rates designed to drive that field out of

business.—See Southern Ohio Rate Case.)

The union field, despite the destructive inroads of oil competition, is demanding an increase of 10 percent in wages. This is based on a curious fact. The Indiana miners, taking 1912 wages as 100, now have an index wage of 177; on the same basis, the anthracite miners had before the Pinchot increase in September an index wage of 176. Since the Pinchot increase the anthracite miners now have an index wage of 194. The miners' union demands the same wage for the bituminous field.

The industry, confronted by oil competition on one side and by a different wage schedule and different efficiency in the non-union field, has reached an impasse in its industrial relations. It cannot proceed long on the present theory. It must find another way out or go into wholesale bankruptcy. I see only two possible solutions at once, viz:

First, if the miners' union wants to bargain collectively, it must be willing to guarantee a maximum labor cost of producing a ton of coal.

Second, to save the industry from ruin at the hands of the oil competition, the operators must be allowed to bargain collectively for the sale of their railroad and steam coal—to build up their selling power to equal the scope of the buying power.

All of this means only one thing. Whatever we may say or think or figure to the contrary, the plain fact is that America has pretty well finished—outside the coal industry—the liquidation of the economic effects of the war. The farmer surely has completed his liquidation. The people of the middle class have finished their liquidation. In the coal industry, the operator has finished the liquidation of excess costs of supplies, overhead, and capital accounts.

In coal labor, that liquidation was attempted in 1922. It was stopped on the theory that the country must pass through a second period of inflation in order to pay the cost of government. Thus coal labor liquidation was delayed two years. That delay beyond the time taken by the country as a whole has served to introduce the oil competition which is ruinous because already it has supplanted 25,000,000 tons of coal. And the substitution is going on daily.

In addition, I saw recently a house built in Ontario without either furnace or chimney. It is to be heated with electric power generated at Niagara Falls. The delayed liquidation of excess labor costs thus is injuring the industry by teaching the people to use substitutes for coal.

It is hardly possible that the miners' union will recognize and rectify the harm it has done.

## COAL IN STORAGE TO BE FINANCED UNDER GOVERNMENT AUTHORITY

An important decision of the Federal Reserve Board has been announced, in which the Board approves the financing of the storage of coal on docks through the use of bankers' acceptances secured by warehouse receipts. Because of its possible future application to other basic commodities, the Board's announcement of its decision is given herewith in full, as follows:

"The coal is stored on docks of a dock company, which wishes to pledge it as collateral. The dock company proposes to lease a portion of each dock to an independent storage company which is financially and morally responsible, has been in the business of storing goods and merchandise of others for profit over a period of forty or fifty years, and is qualified to do a storage business in the states in which the docks are located. Such storage company is to be allowed the privilege of using the portion of the dock leased as a public warehouse; the lease of such premises is to be duly executed and recorded in accordance with all legal requirements; and the leased premises are to be definitely described in the lease and as far as practicable separated from the remainder of the dock company's premises by partitions or fences. On each side, at each corner, and at each entrance to such premises, the storage company will place, and at all times maintain, large signs stating that the premises are leased to it and that the premises and all of the goods therein are in the exclusive possession and control of the storage company. Upon the delivery of the lease the lessor and a representative of the storage company will go upon the premises, and the lessor will thereon state that he delivers the premises and all the goods therein into the exclusive possession and control of the storage company, and thereafter the storage company will direct its representative to take and hold such possession and control for it. It will also employ an agent or custodian to represent it who shall be entirely independent of the dock company, and it is to be distinctly understood between all parties concerned that the storage company's agent or custodian shall act exclusively upon its instructions and shall have the exclusive possession and control of the leased premises and of all goods therein, and that no goods shall be moved into or removed from such premises except under his express direction and control. The dock company will have no access to the premises except with the permission of the storage company and will have no control over the premises or the goods stored therein. The storage company's custodian shall make regular reports to the storage company from time to time, and the storage company shall give him instructions with regard to the receipt and delivery of goods. Upon taking possession of the coal on the premises, and subsequently upon delivery of additional coal upon the premises, the storage company will issue warehouse receipts for such coal, and such receipts are to be pledged as security for bankers' acceptances, which are to be drawn under regular bankers' acceptance agreements.

"The board rules that such warehouse receipts will comply with the requirements of the Federal Reserve act and the board's regulations relating to the character of warehouse receipts required as security for bankers' acceptances used to finance the domestic storage of readily marketable staples, provided they are in proper form to convey and secure title to the holder.

"The board has frequently had occasion to rule that coal is a 'readily marketable staple' within the meaning of section 13 of the Federal Reserve act, so that there is no question with reference to that particular requirement of the law.

"The board holds that bankers' acceptances secured by such receipts are eligible for acceptance by member banks and for rediscount by Federal Reserve banks, provided they comply as to maturity and in all other respects with all other provisions of the Federal Reserve act and the board's regulations."

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## ANTHRACITE FREIGHTS

The investigation by the Interstate Commerce Commission as to the reasonableness of anthracite freight rates has revolved itself into a matter of substitute fuel. While no intimation has been given by the commission there are evidences that a rate cut on anthracite is unlikely. Railroads are understood to have presented a strong case at the hearings as to the reasonableness of the present rates and there has been a lack of evidence or protest against the present levels by shippers or consumers. Calling in F. R. Wadleigh, chief of the coal division of the Department of Commerce to give testimony at hearings at eastern cities on substitute for anthracite has led to the belief that the commission will point to substitutes as the only possible relief in the situation. Mr. Wadleigh gave considerable data to the commission as to various substitutes and methods of their use. The hearings were held along the eastern seaboard from Augusta, Me., to Philadelphia over a period of several weeks.

The scope of the investigation has been broadened by the commission to include rates on bituminous and coke from Virginia, West Virginia, Kentucky, Ohio and Pennsylvania to New England, New York, Pennsylvania, New Jersey, Virginia, Delaware, Maryland and the District of Columbia. Further hearings in the case will be held in Washington early in December.

# SCRAPER MINING PRACTICE

*Giant Strides Made by Mining Industry in Development of Mechanical Appliances—Serious Effort Being Made to Improve Methods, Practice and Equipment*

By J. H. East, Jr., E. M.

THE mining industry has made giant strides in its varied branches during the past few years, and today ores are being mined and treated at a profit that just a few years ago were regarded as too low grade or too complex to be even considered. Progress in mining has not been limited to metallurgical problems, for mechanical appliances also have advanced. The rock drills, the hoists, the compressors, the cars all have been improved, but until recently no serious attempt has been made to improve the methods of "mucking" or loading broken ore by hand which has been followed for centuries. The loading of broken material by hand always has been known as inefficient, costly and extremely hard work, but there was no other method of accomplishing it.

In the preparation of this article Mr. East wishes to give credit to the following sources of information from which much of the data is compiled: Mr. Lucien Eaton, Mr. Ward Royce and Mr. F. E. Boyd, through articles appearing in Compressed Air Magazine, Mining & Scientific Press, Engineering & Mining Journal-Press and Lake Superior Mining Institute.

The scarcity of cheap labor for "mucking" or shoveling led to the invention of many types of mechanical loaders, some of which are very successful in their particular fields, but even these are heavy, unwieldy, and expensive machines that cannot be operated with ordinary unskilled labor, and require skilled mechanics to keep in repair. The initial cost of the loader, as well as the cost of its operation, makes it essential that work be provided for it at all times so that the maximum production per loader may be maintained. This is manifestly impossible in the majority of mining operations which require cheap, readily portable, easily operated machines that can be worked efficiently with ordinary mine labor, and that can be purchased at a fraction of the cost of a mechanical loader.

A system of mining whereby the broken material could be handled with ordinary slip scrapers pulled by small compressed-air hoists was finally devised, being merely the adaptation of the horse-pulled slip scraper seen in any small excavation. The scraper takes its load from the top of the muck pile and is dragged by the hoist to the raise or chute, where it is dumped and the empty scraper returned to the working place by hand. This system of operation increased the production obtained per man per shift from 20 percent to 25 percent and was hailed as a success inasmuch as the only machinery required to obtain the result was a homemade, light, steel scraper and a simple, single-drum, compressed-air hoist.

However, it soon developed that the labor of returning the empty scraper to the muck pile and the short distance that could be economically scraped limited the field of its operations, and the present system of slushing in its varied forms was devised and equipment provided. The new system consists primarily of a small, double-drum, compressed-air hoist weighing about 600 pounds, which not only pulls the loaded scraper but also returns the empty scraper to the muck pile by means of a tail rope, led through snatch blocks. The economical scraping distance has been increased nearly 100 per cent., and in many mines the production of rock per man per shift has been doubled. The undoubted success of the present system of scraper or slusher mining has led many mining companies to alter their methods in order to avail themselves of the scraping system with its many advantages and low costs.

To attempt to describe or lay down rules as to how scrapers may be successfully applied to all systems of mining is impossible, as every mine has its own individual problems and each mine has varied the general scraping idea to suit its own particular conditions, so that it is seldom, even in the same district, that mines have adopted the same system of scraping with identical equipment. General descriptions of the methods successfully employed and plans of equipment used at various mines may be of assistance in solving some of the scraping problems met with every day in the mining industry.

### Scraping With Single-Drum Hoists

Scraping with slip scrapers pulled by small, single-drum, compressed-air hoists is still being practiced in many places where the haul is short and the broken material easily loaded. The slip scrapers used are of varied design, all light and easily handled.

The hoist is generally mounted on a column or shaft bar set a few feet back from the raise or chute in which the scraper is to be dumped. If there is not sufficient room for this, the hoist is placed off on one side of the raise in the drift and the rope led to the scraper through a snatch block. sufficient rope should be attached to the drum of the hoist to permit three or four turns around the drum to remain when the scraper is at its furthest position. A 5-16 inch 8 x 19 plow steel wire rope is generally used in this work, and if the rope breaks the ends are tied together with a square, or reef, knot in place of splicing, which requires time and skill. The economical scraping distance is 35 to 40 feet, and the tonnage delivered per hour of actual working varies, of course, with the class of ore to be scraped and the amount of coarse material to be handled.

### Scraping With Double-Drum Hoists

The use of small, double-drum, compressed-air hoists has greatly increased the scope of slusher mining by increasing the economical scraping distance to 150 or 200 feet, and in many places to even greater distances. Larger scrapers are used to advantage with less physical effort on the part of the miners than formerly, as the scrapers are returned to the muck pile by a tail rope, in place of being dragged back from the raise by hand. The production obtained per man

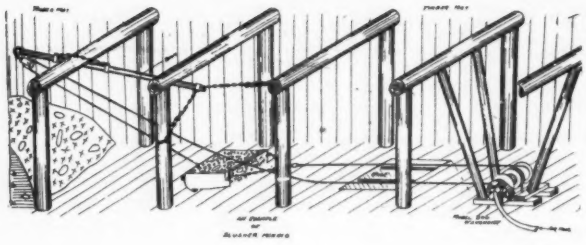


FIG. 2

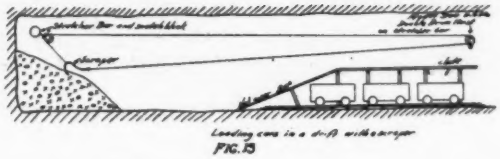


FIG. 15

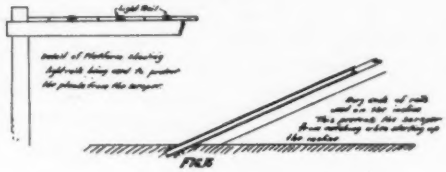
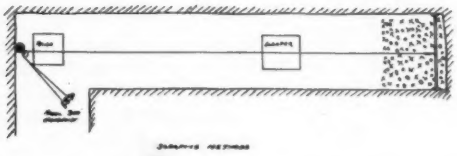


FIG. 16



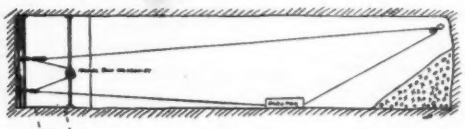
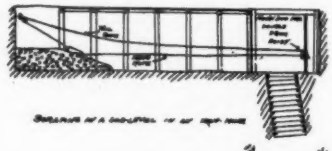


FIG. 3



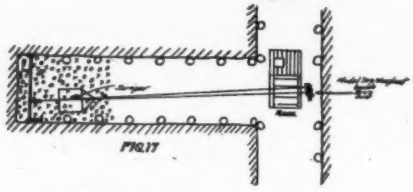
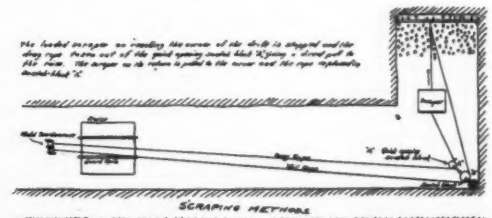


FIG. 17



SCRAPING METHODS

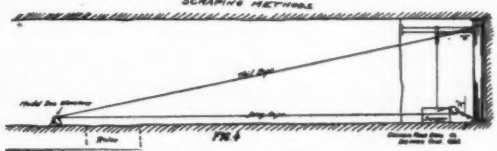


FIG. 4

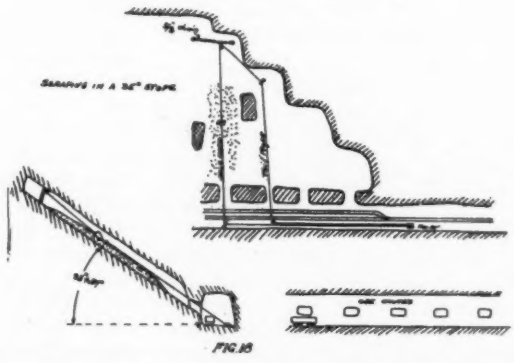


FIG. 18

per shift has been increased 50 per cent. to 75 per cent., with some cases of doubled output, over the old system of hand loading. This can be illustrated by the case of a certain Michigan copper mine which formerly maintained an average daily production of 1,751 tons of ore, employing 101 trammers. Since scraping has been practiced, 57 trammers deliver an average daily production of 1,770 tons of ore, or 31.0 tons per man per shift in place of 17.3 tons attained in hand loading. The greater distance the material is being scraped and the increased production per man per shift has naturally resulted in a decreased cost of mining and has enabled the mines to maintain their production in spite of the labor shortage.

The present practice in the use of double-drum hoists in the iron mines is briefly as follows: The hoist and scraper are assigned to a contract gang together with the drill, drill steel, hose and other permanent equipment. This means that the hoist is working but a small part of the time, rarely 25 per cent. of the shift, but it is ready to work at any time it is needed. The hoists are mounted on skids on the floor level and held in place by three or four posts wedged against the cap timbers, as in Fig. 2, or as in many cases, mounted on a drill-column. The first method of mounting seems to be in most general use as there is less danger of the hoist slipping. At other mines the hoist serves several headings instead of being fixed in one place. In these mines the scraping is generally in charge of a scraping crew of two or three men who load out the broken ore at the various headings in turn. In a few other cases the development of the mine permits the working of a block of ground in two or more places simultaneously, scraping each heading from the same hoist location by merely turning the hoist on its turntable to the desired position. The raises are spaced from 25 to 65 feet apart, and as the haul becomes greater than 60 to 75 feet the hoist is moved forward and the ore scraped into another raise.

The scraper practice in the Lake Superior copper mines varies materially from the practice of the iron mining districts. Large, air-driven hoists developing 25 to 40 horsepower and having a rope speed of 200 to 400 feet per minute are generally used. The lodes pitch at an angle of 35° to 37°, and as the

scrapers used weigh from 700 to 1,500 pounds, powerful hoists are needed. These large hoists are placed in the haulage levels and the ropes led into the stopes through snatch blocks hung on stulls or props. The adoption of slusher mining in some of the mines has made possible the recovery of blocks of ore in the flatter sections of the lode that would not have been profitable to mine by hand methods as it would have been necessary to shovel the ore four or five times before it could be finally loaded into cars. Some mines are abandoning each alternate level and scraping the two levels from the one haulage level. These mines are cutting their new levels at 200-foot intervals in their current development work, with a natural lowering of the development costs.

The following time studies of scraping operations may be of interest:

Scraping practice does not limit its field of application to those drifts where the hoist can be placed directly behind the raise as shown in Fig. 2. If there is not sufficient room for the hoist behind the raise, it is placed on one side, as shown in Fig. 3, and the ropes led through snatch blocks to the scraper. Again, if it is desired to scrape a cross-cut such as shown in Fig. 4, the tail rope is passed through a snatch block, "B," at the top of the mine prop, and the drag rope passed through a quick-opening snatch block, "A," attached to the foot of the prop. As the loaded scraper passes the corner of the cross-cut, the rope is removed from the snatch-block, "A," and the scraper pulled to the raise and dumped. The empty scraper is dragged to a point near the cross-cut and the rope replaced in snatch-block "A," allowing the scraper to continue to the working face.

The use of scrapers for moving loose or broken material is not limited to underground mining. Sand is being loaded from the sand pits; and iron-ore dumps, too small or on too rough ground to justify the installation of steam shovels, are being reclaimed with scrapers; coal is being shifted in the storage piles, and a variety of other uses are common. The equipment used in these cases is generally a small, double-drum, compressed-air hoist, and whatever type of scraper is considered most efficient for that particular work.

*Case* 1:

| | | |
|---|---|---|
| Location | A copper mine in Arizona. | |
| Character of work | Loading out a heading. | |
| Hoist used | Model 300, Turbro Waughoist. | |
| Size of heading blasted | 8½ x 11 ft. x 6¾ ft. | |
| Cubic feet of rock broken | 630 | |
| Tons of rock broken | 55 | |
| Distance trammed | 22 | feet |
| Time used in Setting up | 8 | minutes |
| Getting hoist ready | 12 | minutes |
| *Second set up | 10 | minutes |
| Breaking boulders | 5.6 | minutes |
| Miscellaneous | 26.05 | minutes |
| Actual scraping time | 101.35 | minutes |
| Total time | 163.0 | minutes |

*Note: First set up loosened and was reset.

| | | |
|---|---|---|
| Total trips | 133 | |
| Actual time per trip | 101.35 min. / 133 | 0.76 minutes |
| Cubic feet of material handled per trip | 630 / 133 | 4.73 cu. ft. |
| Weight of 4.73 cu. ft. of ore | | 832 pounds, |

or scraper dragged 1,009 pounds of ore per minute of actual work,
or scraper dragged 680 pounds of ore per minute of TOTAL TIME,
or scraper dragged 20.4 tons per hour of TOTAL TIME.

†*Case* 2:

| | |
|---|---|
| Location | A gold and silver mine in Mexico. |
| Character of work | Well-broken fill. |
| Hoist used | Model 300, Turbro Waughoist. |
| Material handled | 9.5 cu. m. or 19 tons. |
| Total trips | 133. |
| Distance trammed | 14 meters or 46 feet. |
| Total time required | 106 minutes. |
| Time required per trip | 106 min. / 133 = 0.80 minutes. |
| Dragged per trip | 19 tons / 133 = 0.14 tons or 280 pounds, |

or scraper dragged 350 pounds per minute,
or scraper dragged 10.5 tons per hour.

† Note: Case 2 is the average taken of several days' operation.

## SCRAPERS

The scrapers used in slusher mining can be classified generally as follows:

1. Slip scrapers such as are used with single-drum hoists.
2. Modifications of the Bagley grader, which is a bottomless scraper with sides, equipped with either a straight digging edge, a toothed digging edge, or both. These scrapers are used with double-drum hoists.
3. Hoe scrapers having no sides nor bottom, and equipped with straight or toothed digging edges, or both.

Each individual mine selects and builds its own scrapers, generally trying several types before the final one is selected. A few of the types of scrapers in common use are to be seen in the accompanying plans. The slip scraper shown in Fig. 1 is used in the soft ore mines of the Mesabi Range, weighs about 60 pounds and is used with a single-drum hoist. The ore is scraped directly to the chute, a distance of about 35 feet with a maximum length of haul of 50 feet. The scraper has a capacity of three cubic feet, and in actual practice four to six yards of soft, heavy ore are handled per hour. The slip scraper shown in Fig. 5 is in use at one of the California mines and has mucked 100 tons of fairly fine material in an 8-hour shift.

The bottomless type scrapers, shown in Figs. 6 and 7, have been found very effective in handling soft hematite ores and for finely broken material. These scrapers should not be used in coarse, chunky material as the sides will prevent the scraper from taking its load. This type of scraper, in actual practice, has moved 30 tons of fine ore per hour a distance of 40 feet. The weight of the scraper is about 200 pounds.

Hoe type scrapers, such as shown in Figs. 8 and 9, were devised to handle coarse, hard ores that could not be effectively handled with a modified Bagley grader. These scrapers are reversible, having a straight digging edge on one side and a toothed digging edge on the other. The toothed digging edge is used to rake out the big chunks of ore and to comb the ore down from the face, while the straight digging edge is used for the fine material and for cleaning up the drift. They weigh about 500 pounds and undoubtedly have the widest range of use in general mining operations.

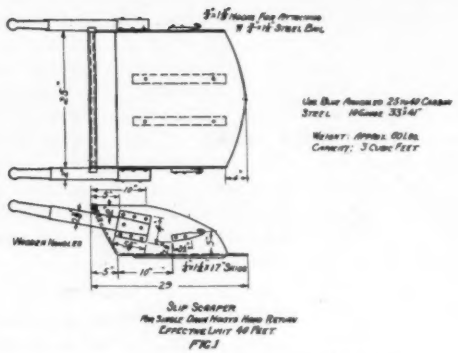


FIG. 1

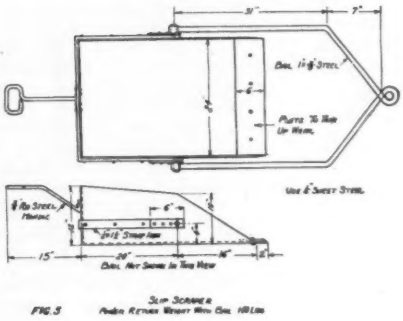


FIG. 5

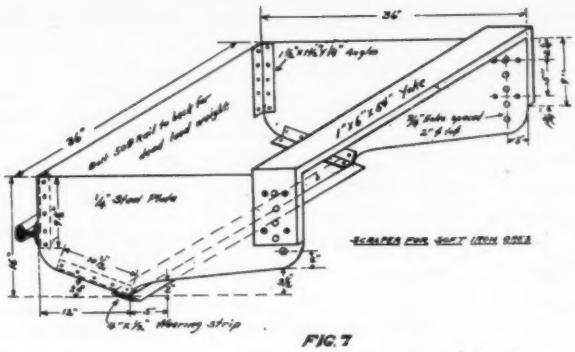


FIG. 7

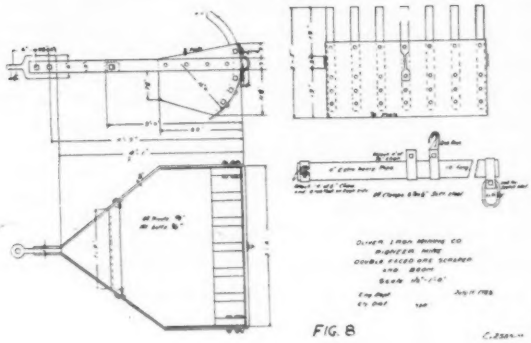


FIG. 8

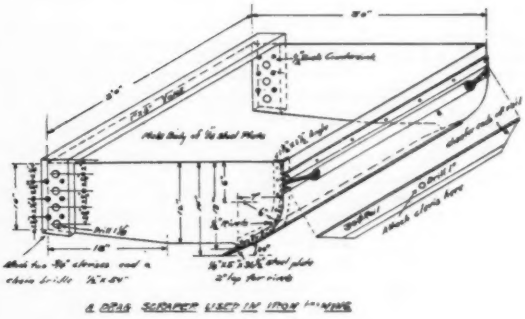


FIG. 6

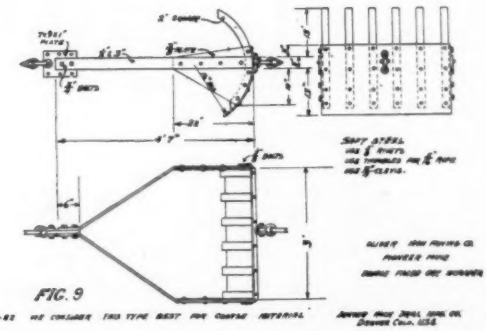


FIG. 9

Hoe type scrapers, such as shown in Fig. 12, are in use in the Joplin district and in the Lake Superior copper district. Powerful hoists are required for their operation as in the previous case. These scrapers have been used in the stopes, and also, when rigged as shown in Fig. 13, have been successfully used for loading cars in the drifts or headings. A production of 65 tons to 150 tons per shift has been realized by this method.

### Snatch Blocks

The ropes for hauling the scrapers are led to the working face through snatch blocks if it is not a direct haul to the raise. The ordinary snatch block, commonly used for hemp cables, will not serve in this work, as the pulleys should be deeply grooved and the housing should fit snugly to the pulley to prevent the rope jamming between housing and pulley. Snatch blocks with steel pulleys of not less than six inches diameter should be used in this work. The housing of the snatch block should be high enough to permit a knot tied in the rope to pass readily, as no attempt is made to splice a broken rope and merely tying a square, or reef, knot and securing the ends to the main rope is deemed sufficient. The head snatch block should be placed high in the drift and as far ahead as possible. In the iron mines a boom made of 3-inch to 4½-inch pipe 12 to 13 feet long, such as shown in Fig. 14, is usually used to suspend the head snatch block, though stretcher bars, and chains thrown around timber sprags, securely blocked in hitches, are also used. The pipe booms are fitted with rings to carry the snatch block at the forward end, and six spikes are placed in the butt end to anchor the boom to the second cap. The boom is hung from the forward cap by chains attached to sliding rings near the center of the boom, and if it is desired to move the snatch block, the butt end is shifted with a miner's pick by pulling the spiked end free from the timber while the tail rope is slack. Another method of securing the boom is to anchor its butt end to the posts of the second set of timbers with chains in place of spikes, as shown in Figs. 2 and 15. These chains are usually made of 5-16 inch steel and are wound around the posts and secured by means of grab hooks. The boom may be swung to any desired position by loosening one chain and tightening the other.

### Ropes

No rope standards have been devised for slusher mining. The ropes used in practice vary from 5-16 inch to ½ inch in diameter and should be as pliable as possible. The drag rope should be long enough to permit three or four turns to

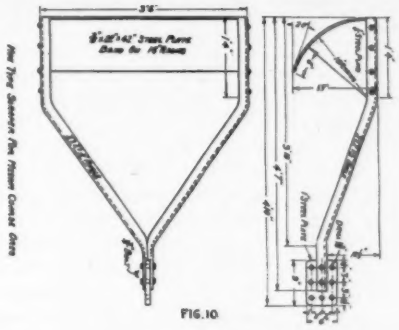


FIG. 10

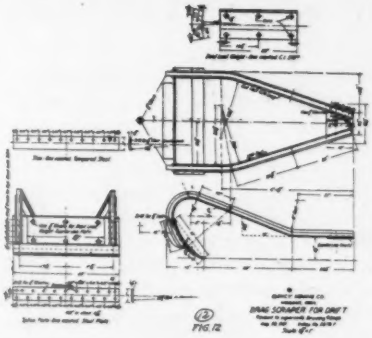


FIG. 12

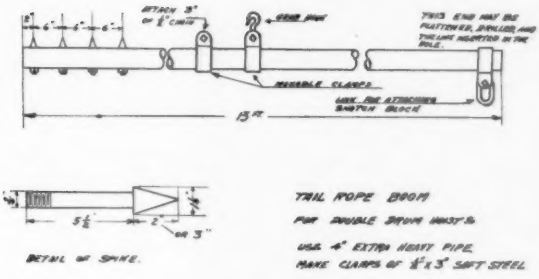



FIG. 14

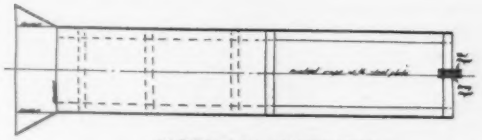
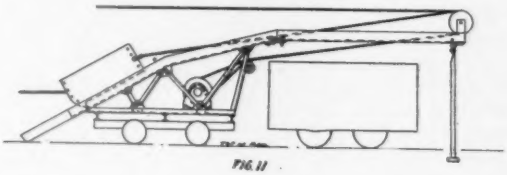


FIG. 11



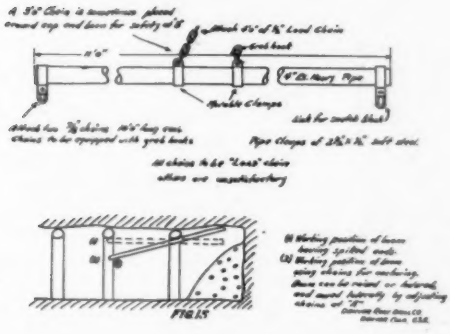


FIG. 15

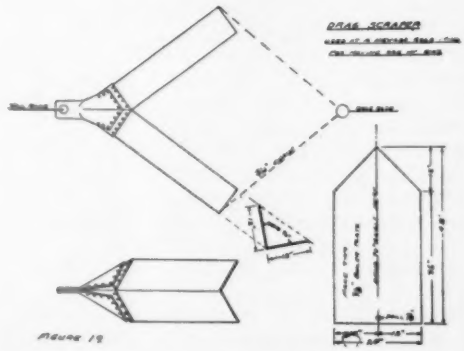


FIG. 13

remain on the drum when the scraper is at its furthest position. To permit the scraper being readily swung to any part of the muck pile, the tail rope should be long enough to allow at least 15 feet of slack rope to remain on the drum when the scraper is at the working face.

### Slides and Platforms for Loading

Various methods have been employed for loading cars with scrapers directly from the floor of the drift. Fig. 13 is an application of the slide and platform method which was adopted to decrease the switching time lost when loading single cars as formerly practiced. A temporary platform made of heavy plank and light rail to prevent excessive wear, Fig. 16, is erected back from the face of the heading. The platform will permit the passage of mine cars beneath it and is about 50 feet long, including the 16-foot approach or incline. The hoist is placed on the far end of the platform, ahead of the hole or chute through which the broken ore is scraped. Rails should be placed on the incline or slide with the ends bent down or buried in the floor of the drift to prevent the scraper from catching on the foot of the incline. The loading of cars from the level by means of a slide and platform has not been entirely satisfactory and a great deal of experimental work is being done with the hope of improving on this method. Recently a departure was made in the experimental "slide and platform" method of scraping by devising a portable slide and platform mounted on timber trucks. The hoist in this case is mounted on the truck beneath the platform and the ropes led through snatch-blocks placed at the end of the platform. This rig can be moved to the various headings as needed, and its portability has removed one of the former chief objections to the slide and platform method of slushing.

The use of scrapers in mines is increasing rapidly, and everywhere the same story is being told of lowered mining costs and increased production per man per shift with less physical effort for the miner. Many mines can profitably replace the present expensive hand methods of loading out their broken ore and install slushers at a very small expense, at the same time altering their development plan to include the new mining method. The experience of the mines that have been slushing for several years, the stories of production maintained despite the labor shortage, and decreased mining costs, all should tend to make every mine operator investigate slusher-mining, see if its principles can be adapted to his particular mining problem, and perhaps secure through it the same benefits so many mines have already obtained.

# GRAND CANYON SURVEY DISCLOSES VAST POWER RESOURCES

*Geological Survey Engineers Defy Dangers of Wild Region To Aid Development of Southwest—Utilization of Enormous Resources Will Promote Mining and Agriculture of Five States*

A SURVEY party from the United States Geological Survey has just completed a detailed survey of the Grand Canyon of the Colorado River. In a trip down the canyon from Lees Ferry, Ariz., to Needles, Calif., the party obtained accurate engineering data which will be used to locate sites at which dams can be built to utilize the wasting waters of the Colorado River for flood prevention, power development and irrigation purposes.

In a graphic description that is full of interesting experiences, thrilling escapes from disaster, and a great variety of adventures, Col. C. H. Birdseye, chief topographic engineer of the Geological Survey, who headed the party, has given an account of the trip down the canyon which was made in four wooden boats, supplemented by a canvas canoe.

Besides Colonel Birdseye, the party was composed of E. C. La Rue and Herman Stabler, hydraulic engineers of the Geological Survey; R. C. Moore, state geologist of Kansas; R. W. Burchard, topographic engineer of the Survey; Lewis R. Freeman, of Pasadena, Calif., a well-known explorer and writer; a pilot; three boatmen, and a cook. Their equipment, in addition to subsistence, consisted of the usual instruments used by engineers and geologists, a radio receiving outfit and complete photographic equipment.

### Enormous Area Affected

The Colorado River, with its drainage basin comprising 244,000 square miles, affects the states of Wyoming, Utah, Colorado, Arizona, Nevada, California, New Mexico and the republic of Mexico. The river has its source on the western slope of the continental divide in the state of Colorado. It flows in a southwesterly direction, passing into Utah, where it receives an important tributary, the Green River.

According to E. C. La Rue, many important undeveloped irrigation, storage and water power projects are located in the upper basin in Wyoming, Utah and Colorado, the development of which will have an important bearing on the plans of development for the lower river. Mr. La Rue says that the magnitude of the projects on the lower river would not be seriously affected by such development in the upper basin. Also, that the demand for cheap power in the mining districts of Nevada, Arizona, Utah, New Mexico and southwestern

DOWN-STREAM VIEW OF MARBLE CANYON

Colorado, where there are many mines that can not be operated successfully until cheap power is made available, will be met by the utilization of the great undeveloped power sites.

The party left Lees Ferry on August 1 and reached Needles on October 19. Through yawning chasms, dark canyons, narrow passages between sheer walls of solid stone, swirling rapids, foaming whirlpools, and mighty breakers, the trip was made successfully and without serious mishap. According to Colonel Birdseye, it was a "genuine thriller."

### Engineer Describes Adventures

"Amid the excitement of running rapids and of the boatmen's dare-devil defiance of the swirling waters of the canyon," relates Colonel Birdseye, "the scientific members of the party never for a moment forgot the main purpose of the expedition. At necessary places the surveying instruments were set up, photographs were taken, and calculations were made in furtherance of the larger ends in view. The work of the expedition was made successful largely by the persistence of the indefatigable Burchard and by the skill and good judgment of Emery Kolb in piloting the boats through the rushing waters of the canyon.

"At noon on August 4 we reached a rapid that lay between vertical cliffs which rose directly from the water, so that there was no foothold for portage and no chance even to look the rapids over and form a plan to run them. We called them 'Sheer-wall rapids,' but we ran them safely, though everybody got wet. We ran such rapids with the boat stern first. We put on life jackets made of cork, with kapok collars (jackets of this kind proved to be the best), and lay face down in the boats, clinging hard to the life lines that were stretched across the deck. The waves seemed mountainous, but we afterward became so used to riding rough water and getting soaked that we vied with one another to make the plunge with a lighted pipe or cigarette without losing the light.

"On August 6 the party ran seven rapids. Dodge, one of the boatmen, upset the canvas canoe in one of these swirls but swam out, dragging the boat with him and righting it without help. On the evening of this day the party camped near some good springs on the right bank of the river and discovered a cave full of steel traps, old tools, and cooking utensils, and, as there is no chance to climb out of the canyon near this place, the trappers must have reached it by way of the river. The party named this place Spring Cave rapids. Here the canvas canoe was lost in an attempt to 'line' it around the rapids; that is, to drag it around by means of lines attached to the bow and stern.

### Vasey's Paradise

"After several other rapids had been run on August 8, the boats passed Vasey's Paradise, 31 miles below Lees Ferry, so named by Major J. W. Powell, the first explorer of the canyon, in honor of George Vasey, a botanist, who would have found the numerous ferns, mosses,

and other plants here a very interesting study, especially as plants are rare in the canyon. Here a large stream of clear, cold water gushes from the cliff about 70 feet above the river. The party filled their canteens, explored a large cave, made surveys of a possible dam site, and camped on the limestone ledges at the head of another rapids, where radio messages were received from KHJ at Los Angeles.

"On August 9, about 41 miles below Lees Ferry, the party passed by some fine arches in the limestone wall of the so-called Marble Canyon and ventured to call them the Royal Arches, for they resemble the Royal Arches of the Yosemite Valley. Here the walls, which rise sheer about 2,000 feet above the river, have been sculptured into wonderful forms by erosion and by the fall of great masses of rock. On August 10 the party remained idle as a tribute of respect to the memory of President Harding, news of whose death had reached us by radio three-quarters of an hour after it occurred on August 2.

UP-STREAM VIEW OF RAPIDS, GRAND CANYON, COLORADO

### A Near Accident

"The next day the boatmen ran the little fleet through Boulder rapids, and the rest of the party picked their way over the boulders along the banks. Blake, one of the boatmen, was thrown out of his boat, turning a complete somersault and going out of sight, but he soon reappeared and caught his boat, which had not overturned, climbed in, and paddled on through the rapids.

"On August 12 the party reached Nankoweap Creek, and found a small stream of clear water—a decided luxury to men who had been drinking the water of the muddy river for nearly two weeks. Nankoweap rapids has a fall of 14 feet, and though the river here contains few rocks the waves are immense. The boatmen shot the rapids successfully, with no other mishap than a bath of muddy water, while the others made their way on foot around the rapids. In camp that night at the mouth of Kwagnut Creek the men thus camped in the depths of the canyon heard and enjoyed the items of the daily news and the baseball scores, as well as the fine concerts broadcast from Los Angeles.

"By mid-August the party was thus working its way downstream, through rapids after rapids, each day bringing its touch of adventure or experience. The engineers had become accustomed to rough water and wanted to ride the boats through the most threatening cataracts, and the better judgment of the boatmen had to be expressed forcibly to induce them to climb around on the rocky and narrow shore. At some places, however, no foothold for walking could be found, for the canyon walls rose straight from the torrent, and the whole party had to shoot through on the boats together and take the chances."

### Difficulties Encountered

Colonel Birdseye described vividly the experiences of the party at Hance rapids, upper Granite gorge, Sockdologer rapids, Grapevine rapids, Specter Chasm, Tapeats Creek, Fishtail canyon, Diamond Creek rapids, Separation rapids, Mattowitteki rapids, and many other points where the party narrowly escaped disaster and encountered almost insurmountable difficulties.

"Through the upper Granite gorge," continued Colonel Birdseye, "difficulty was experienced in getting a footing for instrument and rod stations, for the walls are steep and the water is swift; but the survey line was carried through without a break. The walls here are only about 125 feet apart at the water's edge, and at some places the surveyors had to cling perilously to small projections just above the swirling torrent.

"Between all the perilous plunges down dangerous cataracts the surveyors carried on their work. A continuous line was run through the canyon and detailed surveys were made of possible dam sites at several places, with the hope that these wild and wasted waters might be put in harness for human use.

"Below Bass Canyon rapids there were several small falls and riffles, and beyond these lay Royal Arch Creek, whose canyon contains a clear, cold stream and beautiful falls, pools and fern dells that made it the most attractive place in the canyon yet seen, not excepting Vasey's Paradise.

"At Diamond Creek rapids, Burchard fell on the rocks and fractured a rib but insisted on contuing his survey. With the exception of the first day's work, below Lees Ferry, he had made the entire survey of the river, and he wanted to carry the line down to connect with his old work just above the mount of the Grand Canyon. He is responsible for the entire survey through Marble, Grand, Boulder and Black canyons from a point 7 miles below Lees Ferry to the Bull's Head reservoir site, about 40 miles above Needles.

"On October 13, Burchard brought his line to the monument marking the end of his work in 1920, at Last Chance rapids, 252 miles below Lees Ferry, and checked his elevations, finding only slight error. The voyage downstream was resumed on October 15, and the party reached Needles, 450 miles from Lees Ferry, on October 19.

### Radio Provides Entertainment

"In spite of adverse prophecies, some of them widely circulated in print, that a radio set could get nothing in the depths of the canyon, KHJ, at Los Angeles, was heard plainly, and messages were received at various points from Salt Lake City, San Francisco, and Colorado Springs."

As the result of this daring survey, vast mineral and agricultural development may be expected in the not far distant future. According to E. C. La Rue, hydraulic engineer, "complete development of this great river basin will place under irrigation nearly 6,000,000 acres of land and will furnish more than 5,000,000 horse power to meet the needs of California and the great mining projects which can be operated as soon as this power is made available."

*In conjunction with Mr. East's article on Scraper Mining Practice, special attention is called to the report of the Committee on Mechanical Loading Underground for the Standardization Division of the American Mining Congress, Mr. Lucien Eaton, Cleveland-Cliffs Iron Company, Chairman. This committee made five recommendations to the Fourth National Standardization Conference for use of scrapers in underground mining. These include:*

1. Large scrapers, except those which are to be used only on main levels, should be sectionalized so that no piece will weigh more than 600 pounds.
2. Teeth are unnecessary, and interchangeable manganese steel lips should be used.
3. The digging angle of the scraper lip should be increased for handling coarse material. For fine dirt, an angle of 20 degrees is recommended, which should be increased to as much as 30 degrees for very coarse material.
4. Sheaves for the back-haul should be bushed and should be provided with positive lubrication, preferably by means of a hollow shaft with a grease cup at one end.
5. In large stopes an electric portable flood light of 100 to 200 candle power should be provided with each scraper outfit.

A. Scrapers.

(1) For use on sub-levels a scraper should have a capacity of 6 to 8 cubic feet, should be 3′ to 3′ 6″ wide, and should weigh not less than 150 pounds nor more than 600 pounds.

(2) For use in stopes and rock drifts a scraped should be from 3′ 6″ to 4′ 6″ wide, and weigh not less than 500 pounds. The coarser and heavier the ore the larger and heavier the scraper should be.

B. Hoists.

Hoists should be driven by compressed air or electricity and should have two drums loose on the shaft with friction clutches.

(1) For a scraper 3′ to 3′ 6″ wide the hoist should be of 5 to 10 H. P. with rope-speed up to 150 feet per minute on the haulage rope and 250 feet per minute on the tail-rope or back-haul, and should use ⅜″ wire rope. It should be self-contained and small enough to be easily taken through a raise 3 feet square, should not weigh more than 600 pounds, and should be designed so that it can be easily mounted on either a stoping-bar or skids.

(2) For a scraper 4′ to 4′ 6″ wide the hoist should be of 12 to 20 H. P. with rope-speed up to 400 feet per minute, and should use ½″ or ⅝″ wire rope. This hoist should be easily sectionalized, so that each part will come within the limits set for the Class 1 hoists, and should be designed for mounting on skids or timbers.

# AMERICAN GRAPHITES FOR CRUCIBLES

As the result of a series of tests made by the Department of the Interior, through the Bureau of Mines, it has been demonstrated that American bond clays and Alabama graphite can be used to make a superior brass-melting crucible. Tests showed that crucibles made of these materials gave a service at least equal to the commercial crucibles of the same class which have been sold on the open market, and which are made largely from imported materials. Ceylon graphite, which has heretofore been considered by many manufacturers to be best for crucible work, proved to be third in order of efficiency. Canadian graphite, which had been recommended very highly because of its structure, was last in order of merit. During the war, when crucible manufacturers were required to use 20 percent of domestic graphite, the majority of manufacturers used the Canadian graphite in preference to Alabama graphite because it was composed of larger flakes. In all, seven graphites were tested by the Bureau of Mines, comprising material from Alabama, Madagascar, Ceylon, New York, Texas, Montana and Canada.

Previous investigations of the Bureau of Mines demonstrated that two American clays, Missouri pot clay and Illinois kaolin, gave better results as bond clays for graphite crucibles than the Klingenberg (German) clay or the Dorset (English) ball clay.

Details of these tests are given in Serial 2542, "Graphites for brass-melting crucibles," by R. T. Stull and L. E. Geyer, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

## MINE SAFETY WORK

SAFETY work in the mining industry was the main purpose for the creation of the United States Bureau of Mines. That it has been carrying out this purpose is disclosed in the statement submitted by Dr. H. Foster Bain, director of the bureau, in his annual report to the Secretary of the Interior for the fiscal year 1922-23, in which he states that practically 100,000 miners have been trained by the Bureau of Mines in mine rescue and first-aid methods since the establishment of the bureau in 1910. During the first year of the bureau's existence, it trained 734 men. During the past year, 14,941 men received the training. This training is carried on in thirty-five states and Alaska.

In 1922 gas and coal dust explosions in coal mines took a toll of 311 lives, or more than 15 percent of the total number of deaths.

Two effective methods for preventing the spreading through a coal mine of a minor initial explosion have been demonstrated by the bureau at its experimental mine near Pittsburgh, where more than 500 experimental explosions have been produced and in which the explosibility of coal dusts from all parts of the country has been studied. The first method is to wet the dust so thoroughly that no dry dust remains in the mine. The second is to dilute the coal dust with shale dust, limestone dust, or other noninflammable dust so that flame will not pass from point to point.

The widespread attention given to the fatalities from explosions has resulted in the common supposition that gas and coal dust explosions form the main hazards of mining, but the bureau finds that if the deaths from falls of roof and coal could be eliminated, the number of miners killed would be cut approximately in half. These deaths occur singly or in pairs in the dark recesses of the mine when a slab of slate falls or when coal at the face or in a pillar rolls over and crushes a worker. The deaths from roof falls aggregated 900 during 1922. This number is less than the total during several preceding years due to thousands of men having been idle for several months.

For the 11-year period that ended with 1922, 47.84 percent of all fatalities were due to falls of roof and coal, 16.85 percent were caused by mine cars and locomotives, 11.25 percent by gas and coal dust explosions, 6.04 percent by explosives, and 3.47 percent by electricity. During this period 25,975 men were killed in coal mines. Approximately 90 percent of all the deaths occurred underground, 2.29 percent were from shaft accidents, and the remainder, 7.59 percent, occurred on the surface.

# POSSIBILITIES FOR IMMEDIATE OIL SHALE DEVELOPMENT

*Confidence of Capital in Future of Industry Necessary to its Immediate Development—Industry Must Show Profitable Balance Sheet Before it can Attract Capital—Both by Laboratory and Field Demonstrations it Has Been Proved Conclusively That Oil Can Be Profitably Recovered From Shale*

By J. H. GINET
Denver, Colorado

I FULLY recognize how difficult it is under present conditions, to say anything that will be helpful to the industry. However, it is my understanding that the only reason for the existence of the Oil Shale Section of the American Mining Congress is the possibility of its doing things of practical value tending to the development of this coming great industry. Therefore, having been engaged exclusively in oil shale development work for more than four years, I recognize an obligation on my part to do, as far as possible, anything I can to help our worthy organization to attain the object for which it exists.

To begin with, let me suggest that, at this time in the minds of those who are deeply interested in seeing the oil shale industry developed, there is this vital question: "Why is the development of oil shale being brought about so slowly?" And, in fact we might reasonably ask: "Is the industry being developed at all?" and, if so, "What of real practical work has been accomplished towards actual commercial operations?"

Before attempting to answer these questions let me make a few brief statements of fact, all of which I believe can be fully substantiated.

First, the slowness of shale development is due almost entirely to a lack of confidence, on the part of capital, in the possibilities of the industry.

Second, this lack of confidence is something which, at this stage of the industry's development, should and must be expected.

Third, there is but one thing, and one thing only, which will give capital the confidence it should have in the oil shale industry, and that one thing is a balance sheet from commercial operations showing a profit.

Fourth, we are at this time, figuratively, in the position of the dog chasing his tail—the oil shale industry can not be operated profitably without capital, and, on the other hand, capital cannot be secured for the industry until the industry has shown from operations that it is profitable.

Fifth, with the single exception of the lack of capital there is absolutely no reason why oil and other valuable products should not be manufactured profitably from the shale right now.

Sixth, I want to state, in the most positive terms, that in spite of all the current propaganda to the contrary, sufficient progress has already been made (mostly by private enterprise), both in the laboratory and in the field, to demonstrate beyond question that all things essential to a beginning of successful and profitable shale operations are right now known and available.

In defense of the foregoing statements and that any one may understand my extreme confidence in the present possibilities of shale operation I submit the following figures and information, all of which have been derived from my own personal experience in the business after having expended more than four years' time and approximately $200,000 in laboratory and field work. In order to manufacture oil and other valuable products from shale, the first necessity, of course, is to distill the shale, which in turn means mining, crushing, and retorting. We have carried on research and experimental work at a cost of more than $10,000 a year.

A mountain of oil shale, near De Beque, Colorado

We have, near De Beque, Colo., a shale oil plant (that of the Monarch Shale Oil Company) which is now virtually completed and ready for continuous production of crude shale oil. This plant has cost us nearly $110,000. In our preliminary test operations we have mined hundreds of tons of shale, having our mine now well opened for large scale operations; we have crushed and retorted the shale, and have made large quantities of crude shale oil; it is from the experience we have had with the construction and operation of this plant that I offer the following:

### MINING

After very complete and careful surveys of the shale beds in the De Beque district, made by competent engineers, we adopted the coal mining method of main entrance, cross entries, and rooms with the expectation that later on, as development progresses, we will stope and use the glory hole method. We are thoroughly convinced that this system is preferable to the open-cut steam shovel system, because we have no overburden to contend with, and the richer strata of shale averages only from eight to ten feet in thickness. Consequently the saving and cost of mining by the open method does not nearly equal the difference in value of the rich strata which can be selected by using the coal mining method, as compared with the general run of shale which must be used when operating with the open-cut method. This question of mining method is easily reduced to a matter of dollars and cents, so that we are thoroughly convinced that the coal mining method is by far the most economical. We use a Sturtevant rotary crusher which has given entire satisfaction. Later on we expect to install corrugated rollers as an addition to our equipment when a larger capacity is required. We crush the shale to a fineness of one-quarter inch or less.

### RETORTING

Our shale is distilled in a Ginet shale retort which consists of a cast iron cylinder 3 feet in diameter and 20 feet long within which is an 8-inch pipe shaft on which is mounted twenty 12-inch scoops which rotate at the rate of 10 r. p. m. These scoops alternately lift the shale to the top of the shale chamber and shower the shale back through the heated gases to the bottom of the chamber. Each individual particle of shale every six seconds is thus subjected to a direct application of the required temperature of 770 degrees Fahrenheit. The shale is continuously and automatically fed into one end of the shale chamber and is carried by the scoops in 12 minutes time to the opposite end where it is continuously and automatically discharged. The oil vapors, in the meantime, are being taken

off to suitable condensers where they are converted into crude shale oil.

### Cost

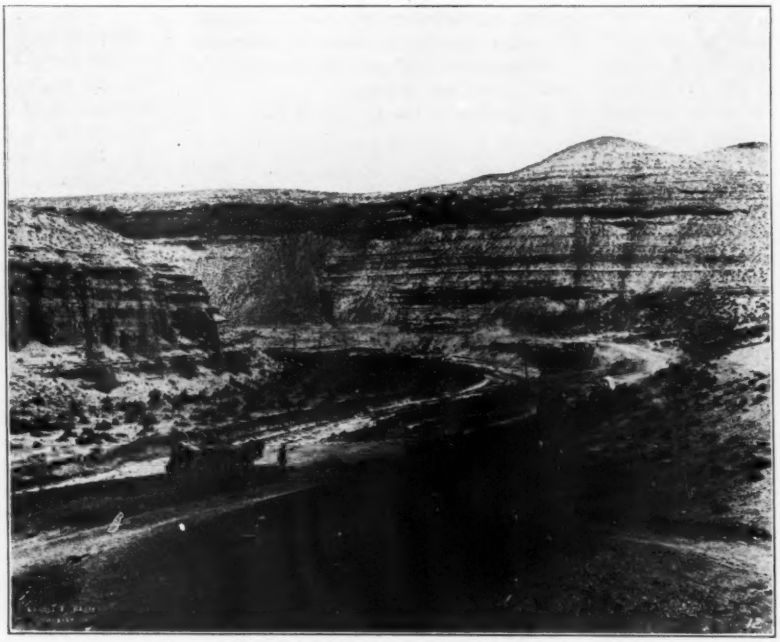
Our costs, as taken from our books and from actual operation, are as follows:

| | Ton |
|---|---|
| Mining | $.91 |
| Crushing | .06 |
| Retorting | .09 |
| We also estimate the following cost: | |
| Depreciation and renewals | .13 |
| All other overhead expense | .11 |
| Total cost per ton | $1.30 |

The shale we are now mining yields 64 gallons, or slightly more than one and a half barrels to the ton, which, of course, gives a cost of 87 cents a barrel. More than two-thirds of our total cost is in the mining of the shale. We are now endeavoring, with excellent prospects for success, to develop certain special mining equipment which we believe will so reduce our mining cost as to bring the total cost of a barrel of crude oil to about 62 cents.

### Shale

We all know, of course, that there are very material and important differences between the crude oil derived from wells and crude oil made from shale, and that, therefore the manufacture of crude shale oil economically is only half the battle. The remaining half is that of refining the crude shale oil into finished products suitable for the market. Our organization has carried on very extensive research and experimental work in the refining of crude oil. I cannot in this paper go into any great details in regard to our refining experiments, but I do know that water white gasoline can be made from crude shale oil with a refining loss of approximately 5 percent and at an operating cost which compares favorably with the cost of refining well oil. We have made many gallons of shale gasoline, pure water white and testing as high as 71° Baume gravity, and have proved conclusively that it is equal to, if not superior to, gasoline produced from well oil. We have also made very satisfactory progress in the laboratory in the production of very high grade lubricants, paraffine wax, kerosene, and fuel oils, as well as numerous other minor products. It is, of course, impossible in the space of this paper to go into the details of our experiences in shale by-products research work. The most I can do is to refer briefly to the various by-products which our work up to date leads us to believe may, and probably will, be produced profitably. Carbon black, of highest quality, can be made at a comparatively small cost; other possible shale by-products are cement, furniture polish, automobile polish, and other products of minor importance. A most interesting possibility or I might say probability, is that shale plants may, and probably will be, operated soon on a large scale, and very profitably, for the manufacture of no oil whatever but for producing by-products only. From the foregoing one may be encouraged to believe confidently that American shales do have, from a practical operating standpoint, tremendous opportunities, and that all the essentials necessary for immediate profitable operation have been provided and are available.



SHALE DEPOSIT, WATSON, UTAH

Allow me to offer a suggestion for action on the part of this organization, which I hope will be found worthy of your consideration. I believe that the greatest obstacle and the one which must first be overcome is that of lack of confidence in our business on the part of capital. I believe that this lack of confidence is due almost entirely to a lack of dependable information and perhaps to some extent to misinformation. Would it not be possible for the oil shale section of the American Mining Congress to find means for making a thorough investigation of the actual progress now being made in oil shale development by all private concerns as well as by state and governmental agencies, and then keep the public informed, from time to time, through proper publicity in our newspapers and magazines, of what is actually being done in shale. If some enterprising concern is found to be making material progress along real practical lines of development, why not see that such work is made known favorably through the publicity suggested. It certainly would help tremendously in the financing of legitimate shale enterprises. The shale industry, just as has been the case with all other large industries, must and will be developed by private enterprise.

Before closing, I want to suggest that the production of oil from shale is or will be builded on a thoroughly sound and stable foundation, whereas, the present system of producing oil from wells is builded on a most unstable business foundation. This fact will be recognized when we consider that millions upon millions of dollars are spent annually in wildcatting and pipelines wherever a new pool of oil is discovered. Soon the pool gives up its oil and becomes practically a thing of the past, and the tremendous investment made previously in the way of tanks, pipelines, and other improvements are a complete loss. In other words, the great trouble with the production of oil from wells is the fact that in the oil well business the base of operations is being continually changed from one place to another. Whereas, with the "shale oil factory," this will be entirely avoided.

American ingenuity always has broken the path that leads to the things that we Americans need and want, and American ingenuity has been and is right now paving the way to shale oil. The foundation already has been laid for this coming great industry. It is now up to us Americans to build the structure with the means that have been provided. Are we going to do it? I hope so, I believe so, and I am trying to do my part.

# ALASKA'S NEEDS OUTLINED

*Governor Bone, in Annual Report, Makes Recommendations for Development of Territory*

THE Governor of Alaska, the Hon. Scott C. Bone, has made his annual report to the Secretary of the Interior this time with renewed hope that the recommendations therein will bear fruit and that 1924 will see a marked advance in the progress of our frontier territory. The year 1923 was a memorable one for Alaska. For the first time in its history a President of the United States set foot upon Alaska's soil and journeyed along the picturesque coast and traveled the vast interior. Not alone was this territory honored by the President of the United States but with a visit from three members of his Cabinet and, prior to their visit, a distinguished delegation of congressmen, senators and business men made a comprehensive trip through the territory and acquired direct knowledge of conditions.

Through the publicity given to the territory by a presidential visit and through the interesting stories that have been written by members of the newspaper staff accompanying these delegations, possibly more has been done to enlighten the average American citizen of the conditions in Alaska than by all previous efforts.

Governor Bone recommends:

1. The placing of the affairs of Alaska under one department head at Washington and the substitution of a coordinated and centralized system of administration for the present inefficient bureaucratic system at the earliest possible date.

2. An appropriation of $300,000 to supplement a fund of $150,000 heretofore authorized for the erection of a capitol or administrative building to house federal and territorial offices and thus facilitate the transaction of business and save the rentals of scattered quarters.

3. Adequate provision for the operation and upkeep of The Alaska Railroad and for the building of branch lines and spurs as required for the development of tonnage and to meet industrial needs.

4. An appropriation of $1,500,000 annually for the building of roads and trails in the interior and provision for the construction of roads and trails into Mount McKinley and Mount Katmai Park.

5. The vesting in the Department of Commerce of complete authority over the fisheries of Alaska, with its Bureau of Fisheries adequately equipped and empowered to make and enforce rules and regulations limiting the catch and number of traps, curtailing fishing areas and closing streams and reducing cannery waste in the public good.

6. Improved facilities for tourist travel, by putting two vessels of the United States Shipping Board in Alaska service, to be operated by existing steamship companies or the board, making regular trips in the summer season through the inside passage and westward to the southern terminus of The Alaska Railroad, thus permitting tourists to see Alaska.

7. The consolidation of all law-enforcing agencies in Alaska under the Department of Justice.

8. A colonization plan to be operative in connection with The Alaska Railroad, with priority rights to lands freely granted to Alaska soldiers of the World War and their dependents.

9. Allotment of a fair percentage, at least one-half, of the net revenues derived from the Pribilof Islands, which are in Alaskan waters, to the general fund of the territory.

In submitting his annual report, Governor Bone has the following to say:

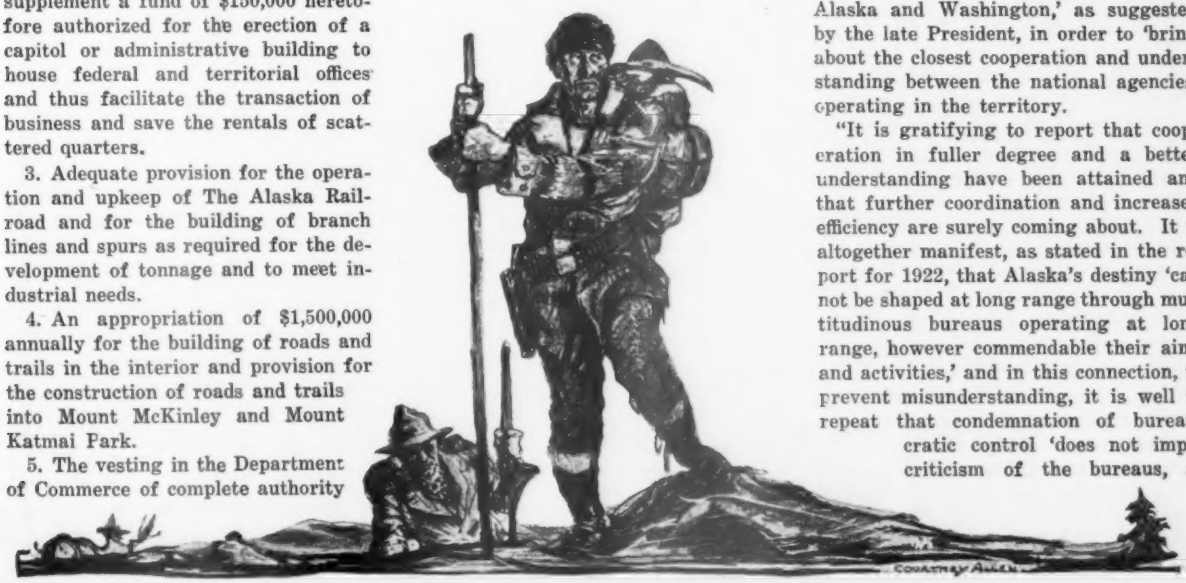
"Owing to the dimensions of the territory and its divergent interests, local and sectional, anything like a unanimity of views as to the territory's needs is still wanting. But, whatever the differences of individual and group opinion, a concensus of faith in Alaska today abounds.

"Administration officials and national lawmakers who came without preconceived theories and fixed convictions, but with open minds, undoubtedly gained much of profit from their visitation, through contact with the people and close-range inspection of conditions. Thus will they be qualified to deal intelligently and helpfully with problems calling for solution and appraise the worth, or lack of worth, of much misinformation which, in the past, has mischievously served to confuse and complicate Alaskan issues.

"Although rich in resources, exaggerated ideas that Alaska is an Eldorado, with its mountains and streams laden with gold, are being dispelled.

"Of the inefficiency of Federal administration in Alaska, through innumerable agencies constituting a bureaucratic form of government, official testimony, based upon experience, is in full accord. The system is too complicated to render satisfactory service, however earnest its aims, and this fact has been uniformly attested and emphasized by those who have been brought into direct contact with the system since Alaska became a territory and upon whom administration as a whole has chiefly devolved. Upon this point there is and has been a perfect unanimity of opinion. A simplified and centralized system brought closer home to Alaska is urgently and obviously needed to speed the progress of the territory—a shortening of 'the line of communication as much as possible between Alaska and Washington,' as suggested by the late President, in order to 'bring about the closest cooperation and understanding between the national agencies' operating in the territory.

"It is gratifying to report that cooperation in fuller degree and a better understanding have been attained and that further coordination and increased efficiency are surely coming about. It is altogether manifest, as stated in the report for 1922, that Alaska's destiny 'can not be shaped at long range through multitudinous bureaus operating at long range, however commendable their aims and activities,' and in this connection, to prevent misunderstanding, it is well to repeat that condemnation of bureaucratic control 'does not imply criticism of the bureaus, as



such, constituting the system' and 'the value of their expert services is not gainsaid or underestimated.' A centralized and coordinated organization, consistently advocated by governors in succession for years, clearly would not rob Alaska of the expert service of any needed bureau or minimize its usefulness in the very least. On the contrary, in promoting efficiency, it would manifestly turn such expert service to fuller account, and increase the usefulness of the bureau.

"Resistance of administrative reform invariably finds expression in the outcry that sinister influences are seeking to despoil Alaska and waste its resources. Such unworthy propaganda, constantly in evidence, too often serves its designing purpose.

"Alaska requires conservation—favors it and welcomes it, and gives steadfast support to every practical safeguard, existent or proposed, necessary to prevent reckless exploitation in any direction in the development of the territory. A concentration of authority and responsibility—a business-like organization of Alaska's affairs in lieu of divided authority and responsibility—certainly would make for administrative efficiency and hasten the safe solution of territorial problems. That government through bureaus is good for any land or any community is too untenable for sober discussion. Equally so is the thought that conservation in Alaska is dependent upon such a system, or that the abrogation of bureaucracy would render the protection of the resources any less secure.

"The territory since it was granted a limited form of self-government has exercised its powers wisely. It administers its purely local affairs efficiently and economically. Its legislatures, meeting in biennial session, have made exceptionally good records during the decade since the organic act was passed and, in personnel, measured up to legislatures of the states. All plans for the future government of Alaska, in preparation for statehood, should contemplate extension of territorial powers and a fuller exercise of these powers.

"Materially the fiscal year 1922-23 showed appreciable improvement in business and industry, and an almost complete recovery from adverse conditions immediately following the World War. Mining activities increased in many parts of the territory.

"The season of 1923, in bringing thousands of visitors to Alaska, emphasizes decidedly that a systematic development of tourist facilities offers great immediate opportunities to Alaska. The two American steamship companies and the Canadian line, with eleven passenger-carrying vessels running on schedule from Seattle and Vancouver, five of them making regular trips across the gulf of Alaska to Seward, and two other large vessels making the voyage by outside passage to Nome, were taxed to the very limit of their capacity, and over 3,000 applicants for reservations could not be accommodated. The coming season promises likewise to be limited only by the facilities provided."

## SUPERHEATED STEAM SHOVELS

By James K. Scott
*Engineer, the Superheater Company*

Since the middle of the summer of 1918, interest in the application of superheaters to steam shovel boilers has been steadily increasing. This interest on the part of steam shovel builders and operators is due to their desire to obtain increased capacity, speed and efficiency. These conditions can be met by superheater application without increasing the main over-all dimensions of the shovels.

The design of the superheater that is most adaptable to the type of boiler generally used on steam shovels is very similar to the standard design used in locomotive practice and is commonly termed type "A." To apply this design requires some modification in the boiler and consists of providing a suitable number of 5 3/8-inch flues and a correct number of 2-inch O. D. tubes.

On one shovel equipped with type "A" design, the shovel before being superheated would use from 45 to 50 tons of coal in four days; after the superheater was applied, the same amount of coal would last seven days and the loading capacity of the shovel was increased 25 percent.

During the late summer and early fall of 1918, superheater applications were made to an Osgood Model 121 and a Marion Model 300 shovel owned and operated by the United Verde Copper Company. Results of tests on these shovels in comparison with shovels operating with saturated steam showed a saving of 33 1/3 percent in fuel, and where the cost of fuel is high such economy cannot with profit be overlooked.

During the summer of 1922 the Bucyrus Company and the Superheater Company jointly conducted a test on a Bucyrus Model 30-B shovel equipped with superheater against a shovel of the same model operating with a saturated steam boiler.

From these results it is evident that the application of a superheater to a steam shovel boiler will produce economies of 31 percent in fuel and 33 percent in water and an increase in speed of 54.2 percent and justify the cost of superheater installation.

The following table gives some of the important data from this test:

| | Saturated steam shovel | Superheated steam shovel | Gain of superheated shovel |
|---|---|---|---|
| Capacity of shovel | 1 yd. | 1 yd. | .... |
| Net working time | 3.81 hrs. | 3.383 hrs. | .... |
| No. cubic yards moved | 313.2 | 431.6 | 37.7% |
| No. dippers per hour* | 129.1 | 164.07 | 27.1% |
| No. cubic yards per hour* | 82.2 | 126.7 | 54.2% |
| Pounds coal per cubic yard | 3.23 | 2.23 | 31.0% |
| Pounds water per cubic yard | 18.26 | 12.3 | 32.7% |
| Cubic yards per dipper | .639 | .772 | 20.8% |

* Net working time.

## DEPARTMENT OF MINES

Senator Oddie, Rep., Nev., has submitted to the American Mining Congress and other mining organizations for their views a draft of a bill creating a Department of Mines which he plans to introduce in Congress when it reconvenes December 3. The purpose of the bill is stated to be that of "fostering, promoting and developing mining, the mining industry, and the mineral resources of the Continental United States and its non-contiguous territory and possessions." The bill proposes to establish a Department of Mines, to collect, through scientific and economic investigations and research, comprehensive and useful information on mining, and on the domestic and foreign marketing of minerals and mineral products. A Secretary and Assistant Secretary of Mines is provided. The President is authorized to transfer to the Department of Mines any service or activity performed by any other government agency relating to said Department of Mines. The bill specifically transfers to the Department of Mines the present Bureau of Mines and Geological Survey.

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American Mine Door Co., Canton, Ohio.

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### BATTERIES (Storage, Gas Welding, Cutting, Dissolved Acetylene)
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### BATTERY-CHARGING EQUIPMENT
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Hercules Powder Co., 934 King St., Wilmington, Del.

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Hercules Powder Co., 934 King St., Wilmington, Del.

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### CAGES
Car-Dumper & Equipment Co., Chicago, Ill.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Holmes & Bros., Robert, Inc., Danville, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

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### CHAINS, OILING
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Stonega Coal & Coke Co., Philadelphia, Pa.
Thorne, Neale & Co., Philadelphia, Pa.
Wholesale Coal Co., Pittsburgh, Pa.

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Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

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Ingersoll-Rand Co., 11 Broadway, New York City.

### COMPRESSORS, MINE CAR
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### CONCENTRATORS (Table)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

### CONCRETE REINFORCEMENT
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### CONDENSERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
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### CONSULTING ENGINEERS
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### CONTRACTORS
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Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
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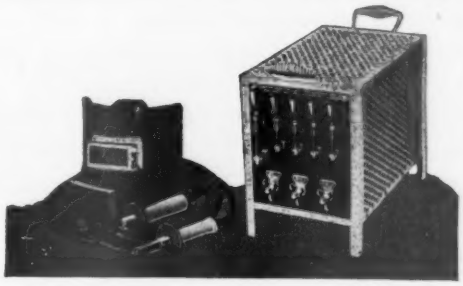
United Metals Selling Co., 42 Broadway, New York City.

### COPPER WIRE
Anaconda Copper Mining Co., 111 W. Washington St., Chicago, Ill.



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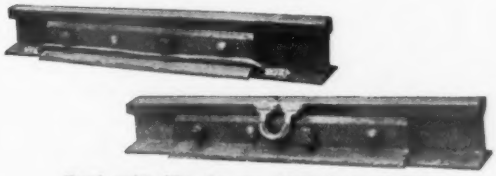
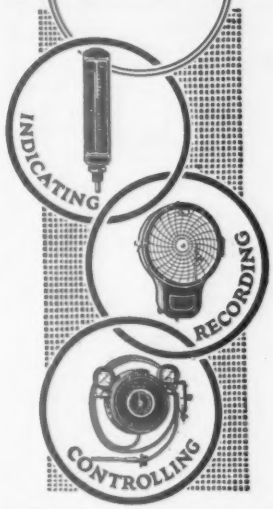


Bond welds like the one shown here on Type AW-7 and AW-8 O-B Arc Weld Bonds are easily made with the type LW Welders

## Tycos Temperature Instruments

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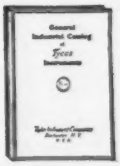

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825

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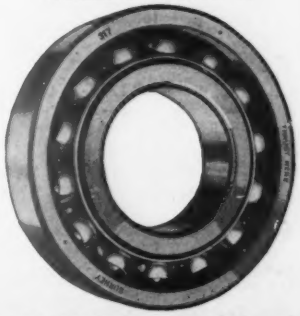

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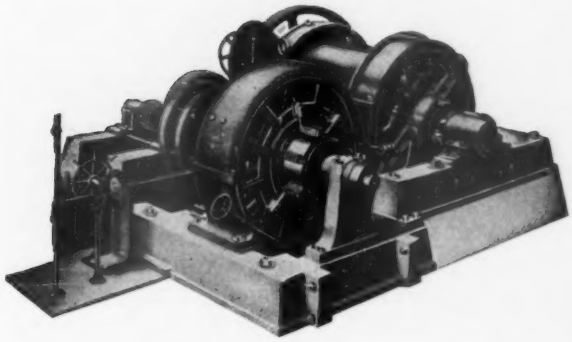

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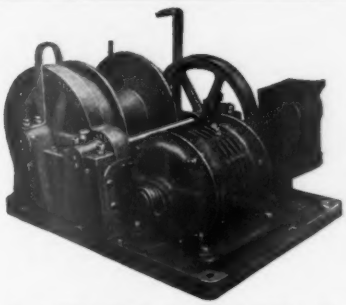

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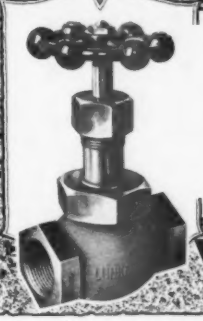

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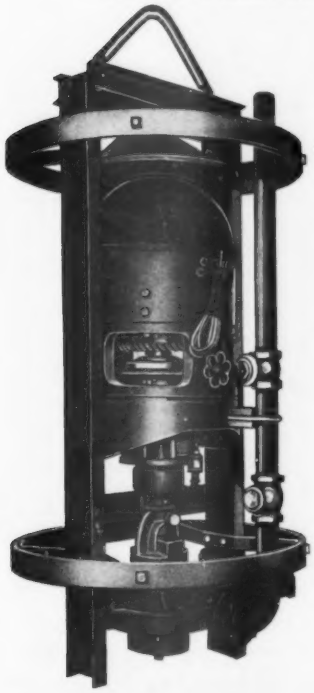

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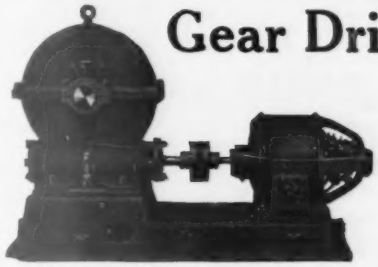

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*Second*—Intelligent conservation with a view to the highest utilization and the prevention of waste of mineral resources.

*Third*—The protection of mining investors against fraud and misrepresentation; the stimulation of investment in real mining and to demonstrate that mining is a business and not a gamble.

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